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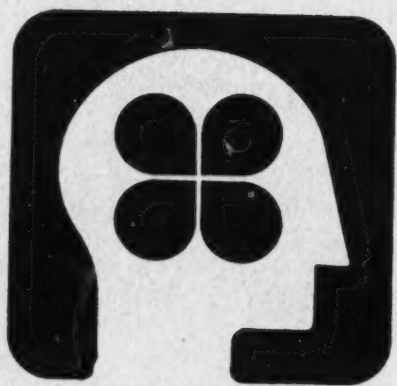
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ABSTRACT

This report seeks to clarify the advantages and disadvantages of three approaches to educational planning, and suggests that an eclectic approach is necessary to deal successfully with the problems and prospects of future planning. Each approach is examined to determine its methodology, its alleged shortcomings, and its application in selected planning situations. The approaches are then reviewed to synthesize a more adequate and comprehensive approach to planning. It is concluded that the three approaches should be viewed as complementary rather than as discrete alternatives, but that, even when taken together, they fail to constitute an adequate basis for planning. Much empirical research remains to be done to develop methodologies and theoretical bases for educational planning. (Tables II and IV may reproduce poorly in hard copy because of marginal legibility.) (JF)

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SYRACUSE UNIVERSITY
ALL UNIVERSITY SCHOOL OF EDUCATION

THREE APPROACHES TO EDUCATIONAL PLANNING

Maureen M. Webster

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CULTURAL FOUNDATIONS OF EDUCATION
CENTER FOR DEVELOPMENT EDUCATION

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THREE APPROACHES TO EDUCATIONAL PLANNING

A review and appraisal of the demand-for-places,
manpower-requirements, and rate-of-return
approaches to educational planning

Maureen M. Webster

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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March 1970

Foreword

It is most appropriate that we inaugurate this series of Occasional Papers with "Three Approaches to Educational Planning." Perhaps no other single educational issue has attracted greater attention in the past two decades than that of planning. National, regional and international agencies have played an active role in promoting the development and adoption of planning techniques. Economists, in particular, and other social scientists have devoted considerable attention to refining, redefining and promulgating planning techniques. With few exceptions, nations of the world have initiated educational planning endeavors and, with varying degrees of success, have attempted to implement plans.

In contrast to this welter of activity in educational planning, there has been relatively little attempt to evaluate, side by side, the diverse types of educational planning. "Three Approaches to Educational Planning" thus helps to fill a gap in the literature. It does not seek to advance support for any one type of educational planning; rather, it clarifies the advantages and disadvantages of each type and suggests strongly that an eclectic planning approach will be necessary to deal successfully with problems and prospects of futures-planning.

This paper was written in early 1968; only minor modifications have been made for the published form. Its author, Mrs. Webster, is an advanced graduate student in Cultural Foundations of Education and is at present a Research Associate in the Educational Policy Research Center of the Syracuse University Research Corporation.

March 1970

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TABLE OF CONTENTS

<u>Part</u>	<u>Page</u>
INTRODUCTION	1
I THE DEMAND-FOR-PLACES APPROACH	2
Influences upon the demand for places	3
Some applications	11
Demand for places: a guide to planning and policy-making?	15
Some conclusions	18
II THE MANPOWER-REQUIREMENTS APPROACH	21
Methodology	21
Principal criticisms	22
Some applications	28
Some conclusions	31
III RATE-OF-RETURN AND COST-BENEFIT ANALYSIS	35
Method	35
Major criticisms and rebuttals	37
Some applications	40
Implications	43
Linkage with other approaches	47
IV THE APPROACHES REVIEWED	49
Two views of the world: dichotomies	49
The approaches again: integration	52
Perspectives for future work	56

FOOTNOTES

Page

i

ANNEXES

Annex I	- A Partial Listing of System Inputs and Process Variables Believed to be Related to Academic Performance (compiled by Thomas Corcoran)	ix
Annex II	- Summary of Principal Points Made in Robinson Hollister's Technical Evaluation of the Mediterranean Regional Project	xiv
Annex III	- The Economic Returns to Education. Summary of the Principal Findings of U.S. Studies	xv
Annex IV	- Select Bibliography	xvi

Introduction

The literature on educational planning customarily recognizes three general "approaches" to planning: the demand-for-places approach, the manpower-requirements approach, and the rate-of-return or cost-benefit approach. The three are often presented as alternatives and each one has its devotees and critics.

The present paper, in Parts I, II, III examines each of the approaches in turn, particularly to determine its methodology, the most frequent criticisms to which it is subject, and its application in selected planning situations. In part IV, the approaches are reviewed as a group in an attempt to achieve some synthesis and assessment in terms of features which might characterize a more adequate and comprehensive approach to planning. It is suggested that the three approaches might profitably be viewed as complementary rather than alternative, but that, even when taken together, as currently interpreted they do not constitute an adequate basis for planning. A good deal of research, particularly basic empirical research, remains to be done to develop methodologies and theoretical bases for educational planning. To be most useful, such research should be undertaken in light of social systems and long-range alternative futures perspectives.

PART I

THE DEMAND FOR PLACES APPROACH

The "demand-for-places" approach to educational planning is based on the premise that there should be access to educational facilities for all those who wish them and who are qualified to enter at any given level. As a guide to planning education, this premise has a simplicity which is more apparent than real. How are we to translate this guide into detailed projections for planning? How should we interpret "qualified to enter"? What determines the demand for education by students? Is this the same thing as "social demand"? What happens if the state cannot (and private enterprise, where applicable, does not) provide all the education of the levels and kinds demanded? Does this method assure overall planning consistency? These are some of the questions which complicate an apparently simple guide to planning educational development.

The demand-for-places approach is often associated in the literature, albeit not always explicitly, with Northern and Western European countries and with the United States. In these countries, universal compulsory education generally extends effectively to at least the junior secondary level; hence the attention of writers on planning focuses upon effective demand for places at higher, post-compulsory, levels of education.

The present review considers in turn the variety of influences on demand for places, the "classic example" of application of the approach--the Robbins Report on Higher Education in Great Britain, and the situation of less-developed countries. At that point, we shall, hopefully, be in a position to summarize the major strengths and weaknesses of this approach to planning.

Influences upon the Demand for Places

Factors influencing demand for places interact in a complex fashion, but as a matter of convenience they may be grouped under the headings of demographic, socio-personal, economic and policy influences.

Demographic influences

The age and the geographic distributions of population clearly affect many aspects of educational planning: enrollments, location and quantity of facilities, provision of teachers, sources and allocation of finance. Where there is effective compulsory education, demographic forecasts play a major role in guiding demand-for-places planning in education. Where universal education is not operative at all or only at some levels of educational systems, then demand calculations become more complex, and supply and policy factors take on greater importance.¹ In any case, global projections of total enrollments based on demographic data are necessary but not sufficient for estimating demand for places for at least two reasons: schools differ and students differ.

Enrollments are spread among different schools, regions, and specialities; to be useful for planning, global enrollment data have to be disaggregated to reflect trends in relevant geographic, grade and specialization distributions and flows of students through the educational system. This involves considering more than demographic data. Moreover, students differ in ability, performance, opportunity and cultural and environmental background. Estimating demand for places involves estimating numbers of students holding certificates or passports permitting access to different streams and to non-compulsory levels of education, estimating how many of them will continue their education, and what their study choices will be. Assessment of achievement levels and of study choices clearly requires more than demographic data.

Social influences and student achievement

Socio-cultural influences, within and outside a formal educational system, affect aspirations, performance and scholastic achievement and hence demand for, access to, and participation rates in various forms of education.

Consider first some influences in the students' social environment outside the school system. Research indicates that demand for places is influenced by changes in the socio-economic composition of the population; by family background factors such as parental education, paternal occupation, and family size; and by community and neighborhood factors.

For example, the Robbins Committee, in attempting to assess future demand for places in British higher education, assembled and analyzed research data on social influences affecting demand. The Committee's examination of the so-called "pool of ability" furnished evidence of untapped "ability reserves" but stressed the difficulties involved in pool-of-ability calculations, both conceptually and in terms of applications in educational planning. The Committee's large-scale inquiry into the social background and educational record of 21-year olds showed close association between occupation and education of parents and the achievement of children in school. In light of the complex interaction of variables, however the Robbins Report was cautious of stressing any single variable.²

A study undertaken at the University of Michigan Institute for Social Research applied multivariate analysis to U.S. data and identified parental education as the principal determinant of expected and realized progress in education.³ The parental influence theme was considered by Knight in relation to observed increases in demand for university places in seven western countries since 1950. She found only meager research evidence to suggest how much of the increased demand might be attributed to parental influence, how far changing parental influences result

from changed attitudes of parents with given social status, and to what extent such influences spring from changed social composition of the population---itself an effect of social mobility.⁴

While most authors are cautious in interpreting data on social influences on demand for education, there is some consensus in the literature that an accelerating factor is operative, resulting from rising expectations of successive generations of parents regarding education for their children. This has been called a "ratchet effect" (Blaug) or a "social mobility multiplier" (Knight).⁵

Such increases in educational expectations are likely to occur at differential rates among different social groups and in different geographic areas. Anderson speaks of a "geographic multiplier": "Circumstances favorable to expansion of schooling culminate or pyramid in a centripetal manner by areas as well as by social strata." The likelihood is that inter-group stimulation and mass media influence will be more intensive in focal areas, accelerating demand for education relatively faster there than elsewhere.⁶

Thus far we have considered some major factors in the broad social environment of education which affect demand for places. There are other influences at work, however, which may be more susceptible to policy-making in education. There are influences operating within the school environment which affect performance, achievement, and aspirations of students---thereby affecting numbers desiring to enter and "qualified to enter" successive levels and alternative types of education.

There is a growing effort by social scientists to identify variables within the learning environment which are significant for scholastic achievement. It would appear from examination of the United States literature (summarized in Appendix I) that, of a range of variables connected with school organization, teacher

characteristics and student characteristics, three are of particular interest in terms of effect upon student achievement: the attitudes of teachers, the composition of student peer groups, and the self-concept of students.

The International Project for the Evaluation of Educational Achievement (IEA) is a major research alliance which has established procedures of research and quantitative assessment for the comparative study of education in different socio-cultural environments. The first study, International Study of Achievement in Mathematics, has pioneered in developing methodology for cross-national comparisons, in devising testing instruments and in identifying and quantifying variables which influence attainment in cross national tests. As might be expected (from the U.S. studies referred to above and from the pioneer nature of the IEA research) the authors are cautious in presenting findings, interpretations, and generalizations. However, this study, involving twelve nations and six years of work, draws attention to relationships of scholastic achievement to input variables--- notably, organizational factors (school organization, curriculum, instructional methods), and "sociological, technological, and economic characteristics of families, schools and societies."⁷

At the present time there is no social-psychological theory of learning which would provide a basis for analyses of efficiency of education in terms of student achievement and its determinants.⁸ Without better knowledge of the system inputs and process variables which most affect learning outcomes, we are ill-equipped to influence these outcomes by policy and planning.

Economic influences

Two major recurrent topics in the literature which may conveniently be considered under the economic rubric are changing levels of real incomes and changing labor market demand for

educated persons.

Various studies indicate a relationship between rising incomes and rising national educational expenditures, and between rising incomes and increased demand for education. Most authors, however, are quick to point out that the relationship is not a simple one. Anderson, discussing the decisions of micro units, observes that "the income elasticity of demand for schooling is considerably greater than unity," that is, an increase in income is likely to engender a more than proportionate increase in demand for schooling.⁹ Sacks, analyzing cross-national data relating per capita income to per capita educational expenditures, found that the income elasticity of educational expenditures was fairly stable over long periods and greater than one for the sample of all 95 countries studied and for the developed countries among them. "Although income is a significant determinant of the level of educational expenditures, it is not the unique determinant. The planning goals and their realization are not a function of the level of economic development, except insofar as the range of variation is very large."¹⁰

Per capita GNP is probably less significant as an indicator of prosperity in international comparisons than is growth of disposable personal incomes because of the variations in proportions of public expenditure, corporate savings, etc., included in the calculations. OECD data do suggest, however, that growth of consumers' expenditures runs more or less parallel to growth of GNP.¹¹ Nonetheless, however we measure increased prosperity, its relationship to demand for education is ambiguous. In the post-war period, for example, growth rates of secondary and higher education in the United States accelerated rapidly in relation to economic growth rates; not so in Germany, where very fast economic growth rates were not apparently paralleled by great pressures to get students into upper secondary schools, the channel to higher

education. In contrast, in the Third World, even where per capita real incomes have not risen, the "revolution of rising expectations" has brought intense demand pressure for more educational provision.

In short, while the income constraint is one within which educational planning must operate, the relationship between income and demand for education is complex.

People may demand more education in part because rising real incomes allow gratification of rising aspirations. But they also demand more education because of its occupational currency. Labor market demand for educated persons is a powerful economic influence upon demand for places in general and for certain specializations in particular. In the cross-national study of university entry referred to above, it was found that from the mid-1950's

...probably the strongest economic influence on demand for university places was the rapidly rising demand for higher-qualified personnel particularly in science and technology which has resulted in increased opportunities and salaries for graduates. The expectation of higher reward due to higher education has given added impetus and substance to the aspirations of parents and their offspring.¹²

Blaug, Peston and Ziderman, in their study, "The Utilization of Educated Manpower in Industry," note that salary differentials are strikingly higher for university educated staff compared with others, nominally in the same broad occupational category ("professional and technical staff").¹³ Blaug elsewhere emphasizes the strong investment aspect of the private demand for extra education in Great Britain.¹⁴ Ruiter, on the basis of detailed analysis of Netherlands data, concluded that "regional differences in secondary grammar school student inflow are determined by differences in the occupational distribution."¹⁵ After critical appraisal of Dutch models for projecting future school enrollments, he suggests that all the factors determining secondary grammar school enrollment in the Netherlands reduce to one: "The occupational distribution of the labour force."¹⁶

It seems clear that there is "push" factor and a "pull" factor at work in relation to the labor market. The current occupational distribution of the labor force relates to the parental "push" to post-compulsory education for their children; and the anticipated market opportunities and salary incentives "pull" more students into educational channels which will enable them to take advantage of the opportunities and incentives they perceive.

Policy influences

The already complex relationship between social and economic variables and the demand for education is further complicated by interaction with policy variables. Policy interventions may stimulate or inhibit the demand for places in education; moreover, the intended and the actual effects of policy may diverge.

Educational policy decisions may be made by various authorities and institutions, the degree of dispersal in decision-making varying according to country (e.g., highly centralized in France, or dispersed among the States of the United States and according to institutional arrangements (e.g., the degree of university autonomy varies from place to place).

Policy decisions have an impact at several levels. Sacks tentatively suggests that a decentralized educational system with decentralized planning and policy-making brings out a larger proportion of resources to education than a more centralized system.¹⁷ Policies relating to the extent and nature of state aid to students in secondary and higher education (universal or selective aid? grants or loans?) affect both the output of "qualified school leavers" and the potential demand for places in higher education. Policy decisions about the supply of teachers, the organization of secondary schools, the provision of places in higher education and the distribution of places by special fields of study all influence the demand for places.

For example, in some countries secondary schooling is so structured that students are channelled at an early age into schools which have no outlet in university education. Thus, in

schools which have no outlet to university education. Thus, in Ruiter's description of the situation in the Netherlands, of five structural forms of secondary education only one, secondary grammar schools, leads to the university. A small percentage of the relevant age cohort is admitted to these schools (16% of male, 13% of female 12-year olds in 1961) and attrition rates are high (1956-60 graduates were 58% of admissions six years earlier). In such a situation policies in school organization and admissions operate to curtail rigidly potential demand for university education. In England, organizational forms of secondary education are fewer, but policies of student selection and curricular organization operate so that students specialize early; hence, early constriction of potential demand for certain forms of higher education. In contrast, in the United States structure (comprehensive high schools) and curriculum organization (much later specialization) allow broader, less pre-determined access to higher education. The various policies which are reflected in these organizational patterns and selection processes affect peer group composition and other variables discussed earlier.

The nature and extent of policy influences cannot be taken for granted. Moser and Layard, based on detailed analysis of the British case, and Knight, based on international comparisons, point out that we are ignorant of the extent to which demand for places is influenced by policy.¹⁸ At one extreme it has been argued that past and present policies regarding the extent and nature of educational supply are the major and overpowering determinant of demand; in this view, policy influences are so strong that there is no point in trying to frame policy to respond to demand. At the other extreme there is the view that non-policy factors are so strong that policy may be unable to influence them.¹⁹ Thus, despite marked and apparently relevant policy changes over the past ten years in Great Britain, the trend in the proportion of age cohorts achieving school leaving certificates has been very stable.

We may suspect or assert the effect of policy actions; but

there is evident need for comparative research to measure sensitivity of demand to policy measures, to find out what influences policy, and what makes for effective implementation of policy in different countries.

Thus, many interrelated, social, economic and policy variables affect demand for places, some of them difficult to identify, others non-quantifiable or not yet quantified. Multivariate analysis offers some hope of assessing separate contributions of identifiable variables and the possibility of better forecasting and more effective policy-making. For the present, we may note that discussion of demand for places has inevitably involved us in labor market and policy considerations--themes which recur no matter what the approach to educational planning under study.

Applications of the Demand for Places Approach

Great Britain

The 1967 World Year Book of Education, devoted to educational planning, cites the Robbins Report on Higher Education in Great Britain as the "classic example" of application of the demand-for-places approach. Floud, in her contribution to the Year Book, lays principal emphasis on the fact that "the Committee rejects the suggestion that they should base any part of their projections on an assessment of economic needs."²⁰ While it is true that the Report places major emphasis on demand for places, the extensive discussion presented by Moser and Layard, technical advisers to the Committee, suggests that the approach was much less "pure" than implied by several commentators.²¹

The task of projecting demand for places in higher education falls into two categories: projecting overall demand, and translating aggregate projections into demand for places by sector and faculty [= U.S. 'department'] in higher education. The most complex

element in the British aggregate demand calculations involved projecting the school trend and interpreting the concept of "qualified school leavers." The Committee argued on balance that factors influencing demand (the socio-economic environment influences considered above) would exert upward pressure on trends.²² They decided, however, to use minimum speculation concerning social-accelerator effects and elected to use straight extrapolation of trends--a conservatism later defended on grounds of the "climate" at the time the Report was commissioned.

Estimating aggregate demand is complicated, but translating it into disaggregated demand involves even more problems. In the British case, projections had to be made for entry into three sectors: university, further education, and teacher training; and for entry into various university faculties. Moser and Layard suggest two possible ways the demand-for-places approach might cope with this problem: 1) by assuming continuation of the present balance of entry to sectors; and 2) by projecting trends in the balance of entry among sectors. Both methods are problematic. The present balance of entry pattern may reflect supply rather than demand conditions; in Britain there is evidence of more demand for university places than is satisfied. Moreover, there is little evidence of the degree to which students might consider further education and teacher education as alternatives. Projection of trends in entry would imply in Britain that declining proportions go to universities. But again, past trends as well as present patterns are likely to reflect supply rather than demand factors. This is a standard problem in econometrics--likely to be particularly severe when supply is determined by policy. Even if we had better data on trends in applications, as opposed to places, these might still tend to reflect supply conditions. These difficulties characterize disaggregation calculations among sectors and also among university faculties.

Under these circumstances, the Robbins Committee adopted a

demand-for-places approach in their somewhat conservative estimates of total demand, but, in determining sectoral and faculty distribution, they took into account several policy goals: demand for places, easing pressure of competition for university entry, ensuring adequate supply of teachers (manpower consideration), allowing reasonable expansion in further education, and the need for more technologists (manpower consideration). For each of the three higher education sectors, the Committee proposed year-by-year development "judged sensible for that sector" and incorporated judgments of manpower needs in considering sectoral and departmental balance. For example, ensuring an adequate teacher supply was so important that it was urged that steps be taken to influence demand patterns in the direction of teacher training if necessary. Again, judgment was influenced by the widespread view that increasing numbers of technologists were needed; Committee recommendations implied that efforts should be made to influence demand for places in this direction. While this is technically far from the manpower approach examined in the next section, we can scarcely characterize it as purely a demand-for-places approach to planning educational development.

Other western countries

Papers on France (Poignant), the Netherlands (Ruiter), and West Germany (Edding), to cite only a few other examples, suggest that major emphasis in these countries has been given to demand for places, but that this is not the only consideration entering planning.²³

In the Netherlands, for example, there are several modifications of the demand-for-places approach. Policy measures are recommended to modify demand in the direction of meeting "output to match society's demand for skilled personnel"; and Ruiter considers that "it would seem logical to base forecasts of the number of [university] freshmen by faculty on the results of studies showing demand for

university graduates" [i.e., manpower demand in the labor market].²⁴

Edding's review of the situation in West Germany traces the evolution from anti-planning in the post-war period towards interest in planning after 1960. His review of the situation in 1965 suggests that many reform programs are under way. While projections tend to be based upon demand for places (using demographic projections and extrapolation of past enrollment ratio trends), there are signs of the influence of OECD ideas, for example, in the combination of demand-for-places and manpower approaches of Baden-Wurttemberg.

Less developed countries

The demand-for-places approach, as we have seen, relies heavily upon extrapolation of past and present trends in enrollments, together with some investigation of (largely non-policy) factors influencing the trends. Western European countries have in common reasonably satisfactory growth rates and stocks of educated manpower which are large in relation to prospective flows. Moreover, the educational changes they may be trying to induce by policy measures are marginal rather than radical.

In contrast, the countries of the OECD Mediterranean Regional Project (Greece, Italy, Turkey, Yugoslavia, Spain, and Portugal) have experienced less satisfactory growth rates and serious manpower bottlenecks, and have expressed the need to take more radical action to alter past trends.²⁵ Educational planning goals, as stated in all six MRP country reports, are in line with this diagnosis. These goals could not be stated in terms of demand for places and marginal policy measures because such goals and measures would be inadequate to effect desired changes.

The situation is more acute in the case of the underdeveloped countries of, say, Africa. Universal education, even for the first four years of primary school, is the exception rather than the rule. Demand for places at higher levels tends to be largely a function of supply at lower levels. In situations where virtually all

students completing advanced secondary education and thereby "qualified to enter," are assured a place in higher education, "demand for places" in higher education has little meaning as an approach to planning.

Both the shape and the size of the educational pyramid being a function of past and present government policies, private demand merely takes up whatever quantity of this seemingly free good the government chooses to put on the market.²⁶

Stocks of educated middle- and higher-level manpower are small in relation to the flows required by economic and social goals as expressed and interpreted in national planning documents. Rationing, allocating scarce resources in line with national goals, is involved at all levels of education (save, in a few areas, at the very lowest). In these circumstances, demand for places recedes in importance and policy measures become the major operative variable in educational provision, measures which are not directed at slow and marginal changes in existing situations, but at radical transformation.

Demand for Places: A Guide to Planning and Policy-making?

In the course of the above discussion, several problems have emerged in relation to the demand-for-places approach to educational planning--notably, the complex interrelationships of variables affecting demand, and the lack of basic research on these variables and on the impact of policy on demand decisions. But there are two other problems which have not been clearly stated thus far: whose demand is to be planned for, and piecemeal planning.

Whose demand?

There is ambiguity in the use of the terms "demand for places" and "social demand" in the literature examined. In frequent usage, the terms indicate the demand arising from the aggregation of

individual decision-making as affected by a variety of social, economic, and policy variables. "Social demand" used thus cannot be equated with an expression of societal objectives. For example, societal (as opposed to private) objectives often include some version of "equality of educational opportunity." Projections used in the demand-for-places approach, as we have seen, involve extrapolation of trends and investigations of factors influencing individual demand. As Hayward has pointed out:

these techniques of forecasting are predictive only in the case of relatively "frozen" position between the determining factors and the future demand for education and hence exclude social objectives which imply educational change... [They] should be seen as a limited forecasting technique, a necessary step in the larger planning process.²⁷

In short, planning based upon trends in social demand is not necessarily coincidental with planning for achieving social objectives. Closer examination of the objective of equalizing educational opportunity, for example, shows that this involves not merely expansion of the educational system, but often radical structural change, reconstitution of the content and operation of educational systems, and "positive discrimination" in favor of socially disadvantaged groups.²⁸

Demand for places is not then synonymous with social objectives demand; nor can it be equated with market demand. Despite emphasis on consumption aspects of education by some authors,²⁹ we have already noted that private demand for education is significantly affected by employment prospects and salary incentives. But when? And how much? This question will be considered in more detail below in discussing the returns to education approach. Meantime, we may note that the private demand response to market conditions tends to lag and to relate to actual situations in the marketplace rather than to what government may anticipate as future needs of the economy. Ruiter found that university freshmen choosing university faculties in the Netherlands reacted to the actual

labor market position of graduates--seven years too late in the Dutch case.

Freshmen do not react to forecasted demand but to actual demand. It may be that by means of an adequate job information service a slow adaptation of inflow to estimated demand can be obtained.³⁰

There is response to market demand trends, but it is a lagging response. In the case of "thin" educational systems of under-developed countries, where compulsory levels are low and where great changes are anticipated, private demand (estimated by the usual extrapolation and projection methods) is likely to produce a graduate supply quite inadequate to meet anticipated future market needs. True, it may be argued that the market can always adapt to the nature of manpower supply available; but at what productivity cost and at what cost in terms of failure to realize achievable goals for the economy and society?

Piecemeal planning

The demand-for-places approach as applied in Western countries examined reflects piecemeal planning. Thus, the Robbins Report was explicit in policy matters within higher education but made no recommendations on policy outside higher education--e.g., school leaving age or maintenance grants for sixth formers. British experience indicates that practical difficulties can arise from lack of coordination of planning and policy. The University Grants Committee in Great Britain since World War II has regularly expressed doubts about employment for arts graduates and has suggested since 1955 that two-thirds of additional places provided be for science and technology majors. Thus, there has been a fairly deliberate policy of providing more science and technology places in universities in line with manpower considerations. However, at the level of secondary education, no specific steps were taken to encourage continuation of the trend of Advanced-level students toward science; and since 1959 that trend has in fact moved in favor of arts

subjects. The result has been that the balance of demand for places in universities does not correspond to the balance of provision; there is greater pressure on arts places than on science places.

Disjunctions of the type described in this British example are not necessarily inherent in the approach. Nevertheless, the tendency to piecemeal planning persists. Interrelationships and mutually supporting aspects of the different levels and kinds of education, and of education and other sectors of activity are frequently ignored in demand-for-places planning. The approach is characterized in practice by lack of attention to such complementarities of development. In any event, even were some greater measure of comprehensiveness to be attained, there is no possibility of linking demand-for-places educational planning to gross national product targets which form the key reference point for development planning in many countries of the world.

Some Conclusions

Some principal points brought out in the above review of the demand-for-places approach may be summarized as follows:

1. Complexity. Complexities of the approach are greater than apparent or implied in some of the literature. Interrelationships of economic, social, and policy factors and the operation of process variables within the educational system which affect achievement levels complicate planning to meet the apparently simple rule: provide places for all who wish access and are qualified to enter.
2. Circularity. Because of the relationship between policy measures and demand for places, there is circularity involved in using the method as a basis for decision-making: policies affect demand, and demand is used to guide policy-making. Trend

extrapolation incorporates supply effects and is not a satisfactory basis for allocative decision-making affecting the future.

3. Multiple goals. Even the "classic" British example suggests that a multiplicity of potentially conflicting goals influences planners and that policies both affect and are affected by these goals. At the level of national goal-setting and at the level of personal career choices, labor market considerations, both present and future, enter the picture.
4. Demand determinants. Conceptually, the approach allows examination of factors taken as "given" in economics-based approaches, such as rate-of-return (see Part III below). It allows consumer satisfactions to be taken into account. It allows consideration of "public" or "national interest" type concerns which would be "externalities" not reflected in returns to education in the rate-of-return approach and which may, in some situations, be of such importance as to question the utility of highly rigorous time-consuming attempts to reach economic optimality.
5. Piecemeal planning. Demand for places as a guide to planning tends to suffer in practice from piecemeal treatment of educational development, from inconsistencies between private demand and overall social objectives, and from failure to consider necessary complementarities in development of education and development of other aspects of national life. In part, this may reflect an anti-planning perspective in relation to national development, rather than inherent difficulty in achieving comprehensiveness; but the approach could not be linked to GNP targets of the type set in development planning and to which the manpower requirements approach is geared.
6. Continuum of application. As a method of assessing needs for educational provision, the approach may be most useful in relatively conservative Western systems with relatively high levels of compulsory education, and in countries which are not

attempting social or economic change of greater than marginal significance. It is suggested that the utility scale of this approach in planning will drop on a continuum according to departure from conservative patterns and reach a low point in socialist countries with relatively "thin" educational systems and strong commitment to radical change.

7. Research needs. Even at the conservative end of the continuum, demand for places can furnish only a partial guide to planners. Even at the radical end of the continuum, demand for places and its determinants are important inputs to planning. To refine the data currently used, more basic research is needed on achievement determinants in the educational process; on interaction of policies and demand; and, where even marginal social change is being attempted, on relationships between policies implemented and actual social outcomes.

PART II

THE MANPOWER REQUIREMENTS APPROACH

Methodology

There are several methodologies associated with a manpower requirements approach to planning in education. The major methods are associated with planners in eastern, centrally planned economies and, more recently, with Herbert Parnes and his colleagues of OECD. The former methods are summarized in the works of Skorov and of DeWitt.³¹ The present paper discusses only the basic OECD methodology which, with variations, has been applied in the six countries of the Mediterranean Regional Project and which has recently been subjected to technical evaluation by Hollister.³² The approach has also found favor in many less developed countries.

In its simplest form, the procedure involves the following steps and assumptions (using the period 1965-80 for purposes of example):

1. Estimate the level and the structure of economic output in 1980; i.e., estimate target levels for total national product and for its sectoral components, on the basis of hypotheses about the productivity evolution of the sectors.
2. Estimate sectoral labor/output coefficients in 1980, on the basis of hypotheses about the productivity evolution of the factors of production.
3. Estimate the distribution of labor by occupational groupings in 1980.
4. Estimate the quantity of labor required at each educational level in 1980, on the basis of hypotheses about education/occupation relationships.
5. Estimate the increase required, 1965-1980, in the numbers of persons in the labor force at each educational level, on the basis of 4 above, and add an estimate of those who will leave employment by 1980.

6. Analyze the changes to be planned in the educational system if it is to produce sufficient output of graduates per educational level to attain 1980 manpower requirements based on the above estimates and upon labor force participation rates.

Both the appeal and the drawbacks of the method are apparent from the above outline. The manpower requirements approach logically relates development of the educational system to economic development targets by linking estimated human resource needs to productivity. It highlights potential bottlenecks in high-level and middle-level manpower (HLMP and MLMP) which could be a drag on production. And it offers the possibility of consistent and comprehensive overall planning which takes into account the interdependencies of the various parts of the education complex and of the education sector and other areas of national development activity. Critics of the approach generally do not attack its logic, but rather the chain of assumptions involved in the estimates outlined above.

Principal Criticisms

The major criticisms of the approach may be grouped into four categories dealing respectively with forecasting hazards, rigidities in assumptions, evaluation of alternatives, and market considerations. In examining the criticisms, the attempt will be made to assess the extent to which they are inherent in the method and the extent to which they may be simply characteristic of applications which have been made.

Forecasting and uncertainty

Critics point out that long-term productivity hypotheses, fundamental to the approach, rest on precarious foundations. Problems of extrapolating the past and predicting the future give rise to very high margins of error. Some critics also point to the

impossibility of deriving requirements for the quantity and quality of skilled manpower needed for certain major sectors, notably agriculture.

Long-term projections and forecasts of any kind are problematic; those who make them generally enter caveats about their accuracy and the need for regular reappraisals. Planners are planning for the future; it is the nature of their task that they must face the problems of dealing with futurity. The main characteristic of the future is its uncertainty--the more so in underdeveloped countries where the desire back of planning is deliberately to influence the shape of the future, to make it radically different from the past. Forecasting, making projections, estimating probabilities and possibilities in relation to desired future states (expressed in target form in planning)--these activities bristle with problems. But we cannot work without forecasts in planning for the future. If this is accepted, then the appropriate questions are not whether or not to attempt forecasts but how to generate a series of evaluated alternatives for policy-makers rather than to proffer a single rigid course of action, how to operate so that adjustment to changing circumstances and information is facilitated and is as undistruptive as possible, and how to avoid planning ourselves out of flexibility?

Rigidities in assumptions

Critics of the manpower requirements approach find it to be characterized by rigidities and inflexibilities in assumptions. Specifically, it is argued that:

1. The method uses rigid production functions, assuming inelastic demands and near zero elasticity of substitution of capital for labor, of one kind of labor for another, and of one type of training for another.
2. The education/occupation hypotheses are overly rigid. There is evidence that categorical education/occupation relationships

are invalid in practice.

3. A long time period for skill formation is assumed regardless of the base of general education upon which skills are built.
4. The Tinbergen-Bos-Correa fixed-coefficient models³³ derive educational implications of growth from the assumption of direct relationships between the proportion of the labor force with second- and third-level education and the level of national income (cf. balanced growth with a given capital/output ratio). Education/output ratios are even less stable than capital/output ratios.
5. Some models show lack of concern for the dynamics involved in reaching future targets. (Tinbergen's model deals with this problem.)

Inflexibilities and failure to consider alternatives are defects of many approaches to educational planning, not just those which emphasize manpower requirements. For example, it is unusual for those planning educational development, whatever the methodology they follow, to consider education other than in terms of the primary-secondary-higher schools complex. There appears to be nothing inherent in a planning approach emphasizing manpower requirements of development which necessarily involves assuming rigid coefficients in the production function, either for the economic sectors or for education.

Table I summarizes steps in the approach, noting variations possible in assumptions and alternatives which may be considered at each step. Thus, at Step 2, for any or for some sectors, variations may be possible in the factor mix of capital and labor and of different kinds of labor. At Step 4, educational requirements conventionally associated with particular jobs may be quite different from those established by job analysis of the behaviors and skill levels required for competent performance of relevant tasks. It is at Step 6, however, that a major set of alternatives may be considered. Having reached some estimate of the shortfall

TABLE I

STEPS IN THE MANPOWER REQUIREMENTS APPROACH TO EDUCATIONAL PLANNING,
AND POSSIBLE OPTIONS TO CONSIDER

Steps Identified	Alternatives to consider
<u>ASSESSING THE DEMAND FOR EDUCATED MANPOWER</u> 1. Consider GDP growth rates by sector in accord with targets set for Year X. <u>Assumptions:</u> achievable and mutually consistent growth rates 2. Estimate labor-output coefficients by sector. <u>Assumptions:</u> re productivity 3. Estimate distribution of labor by occupational groups. 4. Estimate volume of labor required with each educational level in Year X. <u>Assumptions:</u> re education/occupation relationships 5. Estimate the educational output required with each educational level in Year X. <u>Assumptions:</u> We know the educational levels of present workers; attrition estimates are reliable.	- Alternative targets and growth rates (a political option, generally outside manpower planner's sphere, except that he can indicate MP constraints on achieving stated targets) - Alternative coefficients by changing the K + L factor mix - Variations over time - Conventional norms of education vs. education required to do a job by skill requirements - Alternative combinations of skill levels (see also 6. below) - Alternative combinations of skill levels (see also 6. below)
<u>ADJUSTING THE SUPPLY OF EDUCATED PERSONS</u> 6. Analyze adjustments required in the educational system outputs to meet the shortfall calculated in 5. above. <u>Assumption:</u> The appropriate place to make adjustments is in the formal full-time educational system.	Alternative ways of dealing with the shortfall:- - On-job training/formal education/ both - Part-time education/full-time education - Study at home/study abroad - Internal/external labor supply - Improving system efficiency/ increasing system capacity etc.

Abbreviations used: MP = manpower; K = capital; L = labor; GDP = gross domestic product; Year X = target year

in output of labor force participants with identified levels of education, it should not be assumed that the only way to deal with the shortfall is by expansion of the formal full-time educational system. On-the-job training, part-time schooling, sandwich courses and day-release programs offer possibilities for upgrading knowledge and skill levels while students participate in the labor force. In cases where specialized, rigorous, extensive formal training is necessary, possibilities for study abroad as opposed to high-cost expansion of in-country facilities and possibilities of attracting external labor supply for certain activities and time periods should be examined.

Taking into consideration possible alternatives at each step in the methodology complicates calculations but brings us closer to reality and to flexibility in presenting a series of alternatives to policy decision-makers. It also draws attention to deficiencies in data collection (e.g. for non-core educational programs) and to areas of needed research (e.g. education/occupation relationships).

Evaluation of alternatives

The absence of rational investment criteria in the usual formulation of the manpower requirements approach is a defect in terms of planning and policy-making needs. Relaxing rigidities in assumptions according to actual country situations allows presentation of alternatives. But only some form of cost-benefit assessment can provide a basis for choice among them. Here we become involved in the rate-of-return approach, which will be considered in Part III, and in questions of the market mechanism and wage structures, frequently ignored by manpower planners.

Market considerations

Critics charge that the manpower requirements approach fails to consider the utilization of educated people in the labor force, market adjustments to reallocate available manpower in conditions of skill shortages, problems of future obsolescence of skills, and

relative wage rates as determinants of the demand for skilled labor and incentives to those making educational and occupational choices. Directing attention to the market mechanism leads us to consider the controversy over marginal productivity analysis in development planning, a matter more appropriately discussed in Part III below. For the present, it may be noted that as we attempt to meet some of the criticisms of the manpower requirements approach while retaining its basic emphasis upon the interrelationships of educational planning and comprehensive national planning, we are moving toward flexibility and market considerations and away from rigid complementarities and command-economy type mechanisms.

Qualitative concerns

Writings on the various approaches fail to make explicit at times the countries or country-types they have in mind and offer as generalized prescriptions methodologies and solutions which may be feasible only in specific situations or environments. There are wide differences in polity, economy, and society among the countries of North America and Western Europe, the countries with Eastern "command" economies, the countries of Southern Europe, and the countries of the "Third World." Nature and stability of socio-political institutions, economic organization, inherited situations and rates of change in education and in national development, attitudes and values--all these may vary both among and within countries and groups of countries, affecting whether the changes sought in and by education are radical or marginal in relation to existing development.

The manpower requirements approach in its common formulations is susceptible to the criticism that it encourages reliance upon simple quantitative measures of labor force needs and participation rates and of attainment in education. Inadequate attention is given to the quality of performance in the labor force and to the nature of learning achievement in the educational process.

Meaningful measurements of educational output and of the relationship between education and national product are difficult to make, but those utilized in the typical manpower requirements approach calculations are less than reliable if the ultimate aim is the social and economic development of a nation. Balogh, Sen and others have asked whether there is a sufficiently stable relationship between educational input and output for planning purposes, because of variations in cultural, social and political factors in different countries and regions.³⁴ It is important to ask "What kind of education?" and "What kind of product of education?" as well as "What amount of education?" and "How many graduates will produce development?" Moser and Layard say it is an open question whether forecasts can be meaningful without assumptions about curricula.³⁵ Balogh and Streeten argue forcibly in favor of specifying "which type of education combined with what other measures" may be said to meet the needs of development, thereby drawing attention to the fact that education alone is not likely to produce desired development results.³⁶ Current measures used for educational output are inadequate to incorporate such considerations; such progress as has been made in refining output measures is relatively small and has not yet been incorporated in practical planning, to the writer's knowledge.³⁷

Applications

The Mediterranean Regional Project (MRP) of the OECD has involved application of the manpower requirements approach to educational planning in Spain, Portugal, Greece, Yugoslavia, Turkey, and Italy. Examination of the published reports on the first stage of the Project in each country dispels the notion that there is only one version of the manpower approach and that those who utilize it ignore other considerations. The team in Spain considered such issues as educational opportunities, regional development, education

for women, and social and structural balance in planning. The group in Turkey devoted a section of the country report to education and social development, incorporating therein the Lerner researches on traditionals, moderns, and transitionals in modernizing societies.³⁸ The report notes that individual and social demand for places in education are not the same and thus considers problems of student attitudes and mobility limitations. The tone of most of the MRP reports suggests that they are offered as preludes to educational planning rather than as fully orchestrated scores. For example, the authors of the Yugoslav document state:

Let us again stress that the final results as indicated below in the educational plan should not be considered as anything more than signposts on the basis of which relevant educational measures which [sic] can and should be taken. They will have to be evaluated later at constituent republic level, when qualified personnel structures will have to be defined more precisely. Only then will it be possible to trace in the guide lines for educational development. It should be borne in mind, however, that the educational plan outlined below was based on social as well as economic objectives.³⁹

The analyses of the structure and operation of formal educational systems in each country, albeit sometimes open to criticism, represent basic research contributions ignored if we consider the MRP work purely as a set of calculations based on a rigid methodology for estimating and filling manpower requirements.

Experience in utilizing the manpower requirements approach to planning the development of educational systems in the six MRP countries has served to highlight some of the pitfalls of the approach, but it has also presented evidence of potential gains. Hollister's Technical Evaluation raises certain major issues in the methodology. (His main conclusions are summarized in Appendix II.) Utilizing sensitivity and sources of change analysis as evaluation techniques, he arrives at the documented conclusion that the impact

of manpower requirements upon an educational system is likely to be very significant in planning and in practice.⁴⁰ The approach in this sense is reasonable; but much research is required to improve the reliability and sophistication of the forecasting involved. Important key areas singled out for research are the substitution problem, productivity estimates, and, most important, education/occupation relationships. The insights obtainable from analyzing empirical applications of manpower requirements techniques in the MRP countries and elsewhere help give direction to research efforts and offer the prospect of more insightful theoretical developments.

Hopefully, others will follow this path away from empty theorizing toward hard empirical action, and hopefully, the Technical Evaluation has indicated that this approach to educational planning can be frank, more flexible and increasingly sophisticated.⁴¹

The Mediterranean Region is not the only one where manpower requirements of development are a dominant consideration in planning education, nor is OECD the only international organization whose consultants are so oriented. There has been an interesting development in UNESCO's views on educational development in less developed countries--a notable trend away from education-as-a-human-right-for-everyone-at-any-cost towards more rigorous assessment of priorities, costs, and the consideration of the manpower needs of development.⁴² Examination of UNESCO Mission reports to twelve middle African countries in the early 1960's attests to an orientation favoring strong consideration of manpower requirements, on the part of both the countries commissioning the reports and the UNESCO experts themselves. In all twelve cases, the principle of relating educational planning to manpower requirements was endorsed, although in most cases elaborate application of the standard method was not possible because of constraints of time and situation.⁴³

The push to consider educational development in manpower terms

is not the result of rejection by underdeveloped countries of the notion of satisfying "social demand" or "demand for places," but of sheer economic necessity. In most African countries, for example, the state is the principal provider of education at all levels, and the state's resources are so limited that they must be rationed among alternative development projects, of which educational projects are only one subset. Within the education sector, resources have to be allocated among levels and kinds of educational activities. The various strategies adopted for overall economic and social development are primarily intended to stimulate economic growth. Availability of educated people is a major constraint on achievement of strategy targets; hence the need for careful consideration of complementarities in plans and policies for general development, for manpower, and for the education complex.

True, pressures of political and equity considerations as well as economic concerns are very important in Third World countries. Social demand certainly enters the picture, and education for social objectives is of particular importance when externalities (non-economic returns to investment) may, in effect, sometimes be a prime goal of educational projects. But the "demand for places" concept as discussed in Part I above has little meaning as an independent factor. Supply effects are especially strong in systems where past and present policies determine provision of places and where demand takes up whatever quantity is supplied.⁴⁴

Some Conclusions

Comprehensiveness and consistency

The manpower-requirements approach has certain advantages as a guide to educational planning in the context of national development strategies. It can readily be integrated with total economic planning and it can avoid many of the inconsistencies associated with piecemeal planning. It is not comprehensive in the sense that

the measures utilized for educational input and output and for the contribution of education to development take no account of qualitative considerations. This deficiency, however, is not peculiar to the manpower requirements approach; it is characteristic of measurements of education utilized in most development planning. The rigidities and omissions which have characterized presentation of the methodology and some of its practical applications are not intrinsic to the approach; it is potentially able to incorporate concern for alternatives and substitutions and, where this is done, to offer opportunity for some assessment of relative costs and benefits of different courses of action.

Research needs

There is need to improve the reliability and sophistication of forecasting in general and of manpower forecasting in particular and, at the same time, to develop means of quick feedback and adjustment in the on-going process of planning. Further research is needed on education/occupation relationships and on productivity relationships which, in turn, highlight the need for refinements in measures of educational inputs and outputs. Case studies in particular countries which would evaluate and analyze implementation of the approach in clearly described socio-cultural environments would be a valuable complement to attempts at model-building and refinement of measures and indicators.

Relationship to demand for places

Demand for places, in the individual or "social" sense, and places required in terms of estimated manpower needs are clearly related. Both have to be considered in educational planning, although there are major differences in emphasis. Forecasts of places needed to meet estimated future manpower requirements have to be reconciled with forecasts of student demand showing that sufficient demand can be encouraged to take up places which might be made available. If there are insufficient student flows from

lower levels of an educational system, for example, then initial higher-level manpower requirements estimates may have to be modified. On the other hand, anticipated future labor market conditions for graduates have an effect on individual demand for education; hence, any forecast of educational provision to meet projected demand for places must take into account the economy's anticipated demand for certain types of graduates, if employment difficulties are to be minimized.

In the applications examined, demand data and social objectives are taken into account to some extent but as an input quite secondary to manpower needs. In Western countries, where prime stress is given to demand for places, increasing attention is being given to manpower considerations, but these take second place and are partial-planning in nature, being confined usually to certain identified key occupational groups where "shortages" are asserted.

Economic bias

Both devotees and critics of the manpower requirements approach pinpoint much the same problems. Ardent critics conclude that these problems invalidate the approach; supporters argue that, suitably modified and enriched by empirical research, the basic approach is definitely useful, and in some cases, as in countries attempting radical change in economic structures, imperative.

Whichever position one adopts in assessing the approach, the fact remains that the manpower requirements approach to educational planning has a dominant economic bias. Present methodology may encourage the view that education is primarily the servant of economic ends: economic targets are set and, by steps described, the educational system is required to adjust itself to those targets. Applied in less extreme form, one might envision the possibility of mutual adjustments of the economic and educating systems in a way which takes more account of human aspirations and social purposes than strict application of manpower considerations appears to allow.

This implies, of course, some rigorous statement of educational goals, some consideration of trade-offs and some means of evaluating the real costs of pursuing different mixes of economic and non-economic ends.

PART III

RATE-OF-RETURN AND COST-BENEFIT ANALYSIS *

Method

As a guide to decision-making in educational investment, the demand-for-places approach implies providing places according to estimated student demand. The manpower-requirements approach implies providing places according to estimated market demand (manpower needs). Neither, as generally presented in the literature, makes cost a major criterion of what will be done, although student demand for places may involve a cost concept. Neither specifies clear and adequate criteria for decision-making, whether private or public. It is here that rate-of-return or cost-benefit analysis enters the picture; such analysis has been accorded the status of an "approach" to educational planning in the literature.

Rate-of-return and cost-benefit analysis offer rational economic criteria for investment decision-making. In view of the curious situation whereby some applaud cost-benefit analysis and deplore the rate-of-return approach, it is perhaps necessary to point out that, formally, they are essentially different aspects of the same thing. The rate-of-return approach estimates costs and the stream of returns from outlays, and then derives the internal rate of discount which must be applied to the stream of returns to make it equal costs. In cost-benefit analysis, estimated benefits are divided by an actual rate of interest on "comparable" alternative investments and the result is compared with costs. Theoretically,

* The identification of three approaches to educational planning is in keeping with terms conventionally used in the literature. Material on the production function (e.g., writings of Denison and others) has been utilized in this section on Rate of Return. However, the production function writings have certain unique concerns and the production function could well be treated as a separate approach to planning. (See below, page 48.)

in the former case the decision rule indicates: if the internal rate of return is greater than the return from comparable investments, then invest; in the latter case, if benefits exceed costs, then invest. In practice, of course, application of the decision rules is not quite so simple.⁴⁵ The main point, however, is that these techniques or approaches furnish a rational model for investment decision-making, one which can be applied empirically to education to attempt comparisons between investment in education and in other sectors of activity, and investment in different levels and kinds of education, whether at the plan or at the project level. This form of analysis also provides a means of evaluating or estimating the effects of certain policy measures such as: altering the level of grants to university students, raising the school leaving age, changing student/teacher ratios.

When we examine in more detail the bases of the calculations involved, however, problems begin. Much controversy revolves around whether or not these calculations are valid as typically used in the case of education, and whether "marginalism," which is essentially involved, is applicable to decision-making in development situations.

Calculation methods, associated particularly with Becker, Schultz, and Denison, may be considered on the personal and on the national level.⁴⁶ To estimate personal returns to education of a particular level, the calculation involves assessing the private cost (including opportunity cost) of acquiring the level of education, assessing the lifetime stream of after-tax earnings, and then calculating what is called "the private or internal rate of return." On the national level, cost assessments include all costs, including subsidies and such, and the stream of income is calculated before tax; the derived rate is referred to as the "social rate of return." Theoretically, the private rate of return would provide an investment guide to individuals seeking education to particular levels and of particular kinds; and the social rate

of return would provide an indicator to national planners of the most profitable areas of national investment in education. Calculations at the national level have been used in attempts to measure the contribution of education to economic growth, and the controversies which have arisen over rate-of-return analysis as applied to education are closely associated with those centering on the "residual factor" and economic growth.

Major Criticisms and Rebuttals

The principal arguments presented against rate-of-return analysis as applied to education, together with some rebuttals, are summarized in Table II.

It is evident that measurement difficulties are paramount. In the costs category, assessment of opportunity costs and their relationship to the flow of students on the market is a serious difficulty, particularly in terms of the outlays which should be included. But the major measurement difficulties are on the benefit side. Assessment of external economies, multiple correlations between education and income, relationships between income and productivity, and validity of criteria based on marginalism--each of these topics merits a paper in itself.

What of the implications for policy and planning? As with the other "approaches," each side has its devotees. The anti-group, in assessing the problems, defects and omissions in rate-of-return analysis, concludes that they are so serious as to vitiate its use in educational planning. The pro-group appraises the situation and comes to the opposite conclusion: rate-of-return analysis is not invalidated by the difficulties and remains a useful planning tool. Differences in appraisal tend to reflect in many cases the division between adherents and non-adherents of the marginal productivity theory of distribution. At the OECD Conference on

TABLE II

THE RATE-OF-RETURN APPROACH: CRITICISMS AND REBUTTALS
[See also Bibliography #56-78]

Arguments Against the Rate-of-Return Approach	Rebuttals
<u>A. COSTS</u> 1. <u>Opportunity costs</u> 1.1 Student opportunity costs should not be included unless opportunity costs are added for other sectors as well. (Vaizey, Balogh & Streeken) 1.2 Overstated. If those in college went on the market instead of to school, rates might go down. Could the market absorb them? (e.g., Smyth and Bennett) 1.3 Should not include foregone earnings on part-training. Returns on part-training should be calculated separately. (Merrett) 2. <u>What outlays to include?</u> 2.1 Problems of whether to include research, student union activities, halls of residence, etc. (Merrett)	<u>A. COSTS</u> 1.1 We cannot equate measuring the net flow of goods and services with measuring the real cost of particular activities. (Blaug argues Vaizey is inconsistent here.)
<u>B. BENEFITS</u> 3. <u>Conceptual problems</u> 3.1 Psychic income--consumption benefits. (Education-as-consumption vs. education-as-investment controversy) 3.2 Changes in the nature of leisure 3.3 External economies - especially political, social, psychological. 4. <u>Technical problems</u> 4.1 It is mistaken in some societies to assume wages = value of marginal product, or opportunity cost. (Vaizey, Machlup, Ekhaus, Balogh & Streeken, Merrett)	<u>B. BENEFITS</u> 3.1 Arbitrary. We do not know whether to add or to subtract these elements. (Blaug) 3.3 First-round spillovers are incorporated in reported earnings. Why should we demand more quantitative knowledge about effects of education than about effects of (say) industrialization? (Blaug) 4.1 Rate-of-return analysis offers a test of the hypothesis that markets are competitive. Q: Are the imperfections so serious that rate-of-return analysis is invalidated? (Blaug, Bowman)

4.2 Even where prices do reflect present productivities, this may also reflect a badly out-of-joint economy. (e.g.; Latin America - Merrett) 4.3 Difficulties in extrapolating the past and predicting the future: - Use of cross-section data ignores the dynamics of sectoral and occupational structure. (Merrett) - Dangers of adopting prices reflecting the present situation to calculate anticipated returns. Future changes in demand, technology, occupation categories are very important. 4.4 Econometric difficulties: - Earnings reflect more than education. Multiple correlation of variables is involved. - To get net contribution of education we have to engage in multivariate analysis with a large number of quantitative and qualitative variables, heterogeneous in units, and intercorrelated. These difficulties are often underestimated. (Merrett) 4.5 What discount rate should be used in comparing disparate investments?	4.3 - Cross-section data are free from trade cycle influence; they implicitly provide estimates in consumer purchasing power, and provide reliable estimates of costs of student time as a resource input. (Blaug) - We have to predict. Past experience modified by understanding of trends and new developments is likely to be a better basis for decision-making than implicit guesses based on unstated assumptions. (Boven) 4.4 - Earnings reflect education in developed countries. (Smyth & Bennett, et. al.) - True, earnings reflect more than education, but this is not quantitatively very important. (Blaug, Becker, Denison) 4.5 Several suggestions have been made regarding appropriate rates (e.g., Blaug).
C. <u>POLICY AND DECISION-MAKING</u> 5. Private educational decisions are not economically rational. (Vaisey, Anderson et al.) 6. Social rates of return have ambiguous policy implications because educational authorities have goals other than maximizing gross national product. 7. Inadequate allowance for internal consistency. Importance of integrating decisions, especially in education. (Miner) 8. No systematic assessment of linkages between education and economic development over time.	C. <u>POLICY AND DECISION-MAKING</u> 5. Nobody has proved so. Students and parents behave as if they were making rational investment decisions responsive to expected returns. (Blaug) 6. Rate-of-return analysis allows the economic implications of decisions to be taken into account. 7. True, but rate-of-return is still a useful analytic tool. 8. True, but rate-of-return is still a useful analytic tool.

the Residual Factor and Economic Growth, several economists argued heatedly over the acceptability and applicability of this theory.⁴⁷ Scitovsky pointed out the paradox in criticism of manpower planning models and of Denison-type analysis thus:

The main and ever recurring criticism was directed against Tinbergen's assumption of fixed coefficients and balanced growth--in striking contrast to some of the ... criticism of Denison's paper that complementarities are too great and production coefficients too rigid to allow the use of the marginal productivity theory of income distribution.⁴⁸

His co-rapporteur, Neild, concluded that:

It was evident from the discussion that the division between those who believe in the marginal productivity theory of distribution and those who do not was a matter of faith; it was not something that could be resolved by discussion (or conversion).⁴⁹

To a significant extent, it may be that, as Neild suggests, differences between protagonists are a matter of faith--a comment which might be extended to other "approaches" as well. Yet it is suspected that differences, certainly in part, reflect the kinds of societies writers tacitly assume in making their analyses. And this is where we have to consider the areas of application of the rate-of-return technique.

Applications

The strongest protagonists of the rate-of-return approach tend to be American writers; certainly they are the most prolific contributors to the literature. The arguments advanced favoring the marginal approach apply most easily to the American-type, relatively competitive market economy. Outside the United States, wages and salaries often reflect stronger governmental and traditional

influences--hence, problems of shadow-pricing of labor in development planning. Antagonists tend to be either British economists conscious of the greater imperfections of their national labor markets or those concerned primarily with underdeveloped countries, where market price distortions are often acute, where investment decisions may be far from marginal, and where external economies of education may be a prime objective of investment.⁵⁰

It can be argued that in Western-style economies imperfections of labor-market pricing may not be serious enough to invalidate rate-of-return analysis, that indeed such technique offers a test of the hypothesis of competition in the market.⁵¹ In underdeveloped countries, however, wage structures tend to be much more distorted, particularly in government and administration sectors, which often employ the majority of high-level manpower. In more developed countries, it can be argued that current stocks of educated manpower tend to be only marginally affected by flows and that we would do well to give prime consideration to learning more about the nature of the stocks. In contrast, in the less developed countries, flows have far from marginal effect on meager stocks of educated manpower and thus assume much greater significance. Again, in countries with well-established, stable social, economic and political institutions, education is often concerned with change only in marginal fashion. In less-developed countries, a major aim of educational programs may be to stimulate or support fairly radical change in society and its institutions; the so-called "externalities" of human capital investment theory may in fact be a major concern in such circumstances.

It would be easy to move from these generalizations, as some have, to the notion that rate-of-return analysis is "all right" for developed Western economies, but inappropriate in underdeveloped countries. Such a conclusion would be unfortunate, if it meant wholesale elimination of this tool of economic analysis from the planner's meagerly stocked toolkit. Any analytical tool may be

useful if we are aware of its potentialities and limitations and know how and when to use it. Cost-benefit analysis, alone of the "approaches" discussed, presents a rational comparative criterion for evaluating investment projects and programs and for allocating resources among alternative uses. Without belittling the problems of comparing radically different types of investment, especially in the area of social infrastructure, or dismissing the difficulties of assessing externalities, it is surely sound to argue (following Bowen, Blaug and others) that it makes more sense to advocate something on non-economic grounds after rather than before the implications of the economic point of view are clearly understood. Moreover, because in the process of planning for the future we must predict, what we can learn from experience and interpretation of trends and new developments may be a better and more explicit basis for decision alternatives than implicit guesses and unstated assumptions. At least, at the project level within the education sector itself, a sound case can be made for evaluating costs and actual or expected returns from alternative school locations, training programs or methods of aiding students. Proposals for development of education are too frequently and too confidently offered without any such assessments being made.⁵²

What about applications of rate-of-return analysis to specific national cases? Some selected examples are listed in the bibliography and the principal findings of U.S. studies are noted in Appendix III. These latter studies suggest that increases in years of formal education of labor force participants have made significant contributions to economic growth in the United States and that both private and social returns on educational investment are very profitable. Blaug's analysis of sample British data offers tentative estimates of social and private returns to investment in various types of education--a less explored field. DeWitt's study analyzes data on costs and returns in Soviet education and offers tentative comparisons with the U.S. in terms of contributions to

economic growth.

In the case of less-developed countries, problems of rate-of-return calculations are particularly acute because of rigidities and distortions in wage structures: relative earnings are known to be poor indicators of relative productivities. Few authors have attempted such calculations. Carnoy's research offers estimates of returns to schooling in Mexico; a paper by Oscar de Echevarria-Salvat gives some data for returns to schooling in Venezuela.⁵³ Smyth and Bennett's contribution to the 1967 Yearbook of Education favors rate-of-return analysis over manpower approaches and offers estimates of returns to investment in various levels of education in Uganda.⁵⁴ The admittedly simplified analysis and the degree of speculation involved in this Uganda-based study cast some doubt upon the validity of the results as a guide to decision-making, even in the short term, but they do not diminish the essential thesis that rational investment allocation must have reference to costs and benefits and that there are price dimensions involved which are generally ignored in manpower requirements approaches to planning.

While rate-of-return studies for Third World countries are uncommon, the cost-benefit framework is evident in some non-quantitative analyses of investment decision-making in education. Writings on employment problems of schooled persons reflect a concern for relating labor market realities and policies to educational planning. The growing literature on unemployed school leavers in Africa, for example, is of particular interest and highly relevant to educational planning approached in cost-benefit terms.⁵⁵

Implications

The details of the various studies referred to above are of

less interest for the present discussion than the implications which might be drawn for educational planning. Most of the authors couch their conclusions in cautious terms. The suggestion remains in the Western literature, however, that both social and private returns to education are high; and there is little doubt that the widespread attention to U.S. findings has contributed to the steady surge of interest in investment in education both in the West and more particularly in underdeveloped countries. The dangers of assuming that experience is transferable, that successes can be repeated, and that education is an undifferentiated good which will produce growth are considerable. Several studies have applied rate-of-return analysis at highly aggregated levels, often isolating education from crucial complementarities or at least failing to emphasize the significance of those complementarities. To arrive at any valid conclusions for planning and development in any particular case, we have to specify what kind and what content of education, what complementary programs and policies in other sectors of activity, and what societal characteristics are involved. This is true for any approach; but it applies with particular force to drawing inferences from rate-of-return findings.

As long as crucial distinctions are blurred by aggregation, crucial connections severed by isolation, and historical and geographical differences neglected, the results will be useless or misleading.⁵⁶

What then is the utility of rate-of-return or benefit-cost analysis in educational planning? It is suggested here that for the present its principal usefulness may not lie at the level of making alternative overall planning choices, either among alternative social infrastructure investments (more hospitals or more schools?) or among these and more directly productive investments (more factories or more schools?). Indeed, the overall development strategy is not under the control of the educational planner, although, hopefully, he is involved in the total planning process and contributes to it. Without an appropriate unifying strategy,

individually sound policies or projects in education or other sectors are unlikely to result in attainment of growth targets. But even with a unifying strategy, criteria for evaluating individual projects must be developed. It is here that cost and benefit considerations can direct attention to the importance of considering alternatives, to the nature of the choices open and to standards by which costs and benefits may be calculated in a given case.⁵⁷

For example, in assessing costs and benefits of any program or project, it is suggested that we should ask at least three sets of related questions.

First, should we undertake this project at all? Are there other, unmet ends of higher priority? Could the ends this project proposes to serve be met instead by undertaking another, less costly course of development? Do we have sound grounds for assuming it will produce the stated benefits? For example, if it is suggested that undertaking certain educational projects is desirable because they will lead to attitude and value change, we should evaluate the research evidence to determine if change is likely from the projects as designed and also assess the economic costs involved, as well as possible social costs in terms of disruptive social change. If we aim to produce a certain kind of manpower for industry, is a formal schooling project a better answer than training on the job? If we require some highly specialized engineers, is the appropriate project to initiate a university engineering department for the specialty, to train workers abroad, or to import skilled expatriates?

Second, given the project, what is the technique appropriate to achieve at least cost the relevant benefits? What standards of design, technical and economic coefficients, etc., are appropriate to the local situation and time horizon involved? For example, if, in a desire to increase the productivity of certain school programs, it is asserted that we should decrease the

pupil/teacher ratio (a productivity gain assumption that bears scrutiny), then cost-benefit considerations suggest that we should assess costs such as outlays for teachers' salaries, alternative utilization of high-level manpower, decreased utilization of schoolroom space, in relation to the returns which may be expected in terms of output of student graduates. Again, if we are considering a school building program, we have to raise questions of location, of economies of scale, of alternative building techniques which may be appropriate to local conditions, although not on standard Western models.⁵⁸

Third, what are the interdependencies of this project with other areas of development? In particular, what are its external costs and benefits and what complementarities are essential to its success? For example, if we build a school in X location, what costs must be incurred in road improvement, in transport facilities, in staff housing, in social work to provide adequate conditions for attendance, performance, and graduation of the estimated output? Again, if we establish that a project operating efficiently (internally) will produce Y increase in primary graduates per year, where will they be employed? What investment has to be made in creating employment opportunities to complement increased production of schooled persons who cannot continue within the system?

Such questions may seem somewhat remote from the aggregated studies of rates of return to education cited above. It is suggested here that there is room for a great deal of refinement in these studies. Caution should be used in drawing planning inferences from them, particularly in less-developed countries where research evidence is meager. But there are certain fundamental questions of investment decision-making in education to which planners' attention is directed by cost-benefit analysis--questions which can be, and indeed often have been, ignored when only a manpower approach to planning is used. Whatever the approach to planning and whatever the favored national orientation to development, the

cost-benefit analytic tool should be part of the educational planner's equipment, to be used to make explicit the real costs and assumed internal and external returns of any recommended undertaking, to clarify defects of data and expose areas of needed research, and to direct attention constantly towards evaluation of alternative possibilities for utilizing scarce resources in education.

Linkages with Other Approaches

Rate of return and demand for places

The rate-of-return approach is based on economic analysis. Demand in such analysis is a schedule of quantities taken at various prices. Non-price correlates of demand are taken as "givens," parameters, constants, part of the ceteris paribus assumption in analysis. Such a constant X (demand) may be allowed to vary, but the analysis then says "If X is varied, then..."; it is not concerned with why X might vary.

The demand-for-places approach says something about the "givens." It directs attention to demand and return determinants, to consumer and societal preferences and satisfactions which are not entirely economic in nature. Consideration of non-wage returns to education may be of particular concern in countries pushing strongly for political socialization and attitude change via education. This is not to say that economic returns are unimportant - far from it; but it does raise the question of how much time should be spent in trying to achieve economic optimality.

Benefit-cost and Manpower Requirements

The manpower requirements approach in its usual formulations has been criticized for failure to make assessments of alternatives. But it is not impossible to introduce such evaluations into the methodology. Thus, where methods of meeting stated demand are

introduced, alternatives might be compared in cost-benefit terms.

Rate-of-return analysis draws attention to different monetary rewards for different employments. In this, it offers a corrective to discussions of manpower needs by noting that, in economic terms, such "needs" are represented by demand backed by readiness to pay; that is, it draws attention to the importance of the incentives structure in the labor market.

Rate of return and the production function

Part III has attempted to examine the rate-of-return approach as discussed in the literature. In so doing, it has reflected that literature in glossing over a relevant distinction which may be made between rate-of-return analysis and production-function analysis. They are not the same, although they are related and many proponents of the rate-of-return approach would argue strongly that the production function underlies their analysis: among the returns to education is increased production.

Rate-of-return analysis assumes certain underlying technical relationships between education and production, but it is significant that these are not explicit. Simplifying, we can say that there are three steps to consider: (1) inputs of education, (2) use of education to produce increased goods and services, and (3) evaluation of those goods and services. The rate-of-return approach jumps from step (1) to step (3) without the intermediate step which concerns how, in a process sense, education contributes to increased productivity. Only some variant of the production function approach might deal with this. Efforts, for example, to examine the relationship between education and the adoption of productive techniques are likely to be of particular interest for planning purposes--especially in Third World countries where, as we have seen, measures of returns to education purely in terms of income are likely to be distorted.

PART IV

THE APPROACHES REVIEWED

Two Views of the World: Dichotomies

Previous sections of this paper have examined separately three approaches to educational planning. This final section considers them together, emphasizing dichotomies first and then possibilities of integration.

Planners operating in different societal environments may be characterized as placing major stress on individual and "social" demand for education or on manpower supply needs of the economy. Bowman and Anderson, in a seminal paper on approaches to planning, suggest that contrasts between the manpower requirements planning and the rate-of-return approach had "roots deep in the ways men look at political-economic systems and in the controls over those systems that are attempted in practice." In a more recent paper Blaug speaks of "two views of the state of the world," of the "neo-classical universe" and the "Leontief-type universe," with countries falling along an ordinal continuum between the two.⁵⁹

Table III picks up the polarity or dichotomy theme, comparing two "views of the world" in terms of characteristics of economic systems, decision-making, and associated planning. No country lies at either extreme. The U.S.S.R. and other command economies, while not the pure "Leontief-type universe," lie close to the highly controlled end of the continuum. The United States, while not the pure "neo-classical" model, leans toward the more laissez-faire competitive end of the continuum. Other Western systems and Third World countries might be distributed at various points between the two.

At both ends of the continuum, deficiencies in practical outcomes of favored procedures have produced trends in planning and policy-

TABLE III

TWO VIEWS OF THE 'STATE OF THE WORLD'

	Highly controlled universe	More laissez-faire universe
Economy, planning, market	Highly planned economy Tight control of markets Elaborate price-setting	"Invisible hand" direction Reliance upon signals given in the market
Decisions and administration	Tightly centralized administration. Elaborate multiple decision-making at national level	Decentralized administration Individuals, firms, etc. make decisions guided by self-interest
Type of educational planning	Focus on detailed manpower requirements of production	Focus on demand for places, individually determined
Coefficients of production and of education	Extreme complementarities in production and educational systems. Fixed input coefficients Rigidities in operation	Substitutions in production and educational systems Variable input coefficients Flexibilities in operation
Nearest actual type	Eastern "command" economies with strongly centralized, directive planning of production and of education	U.S. type "market" economy Responsive rather than directive planning
Types of change attempted	Initially radical. Now more marginal	Usually marginal
Observed current tendencies	Towards reform, involving some more flexibility and some devolution of decision-making	Towards more formal planning and control to remedy market defects and achieve overall societal goals
Present stocks and flows of manpower	Stocks large relative to flows, but flows highly planned	Stocks large relative to flows. Some concern with particular professional flow categories

making which tend to narrow rather than to increase the dichotomies. Manpower and education in Soviet development in practice incorporate more flexibility in use of alternative solutions than is generally assumed.⁶⁰ Current economic reforms in countries of Eastern Europe incorporate trends of varying force or weakness in the direction of less rigid and centralized planning and more elements of consumer choice. In the West there is more concern than in the past with planning and directing the course of the future, with study of "dynamic shortages" of specialized personnel, with deliberate attempts to manipulate the direction taken by "the demand for places" in education and other individual choices in line with overall social objectives and with national specification of manpower needs in certain fields.

The situation of less developed or underdeveloped countries is of particular concern. Countries of the Mediterranean Region of Europe, with economic development indicators lagging behind those of their European neighbors, have taken a stand in favor of manpower planning and policy-making in education to stimulate growth rates rather than relying upon market forces. But planning experience in the Mediterranean Regional Project, as we have seen, has highlighted the importance of flexibility, substitutions, and more basic research.

The problems of the Third World differ from those of either end of the continuum and call for insights from the experience of both, as well as for closer examination of the peculiar circumstances of countries considered. On the one hand, necessity dictates a national planned approach to development goals, with concomitant emphasis on manpower requirements; but administrative resources are 'thin' and cannot cope with over-centralized multiple decision-making. On the other hand, social and political pressures and need for flexibility direct attention to demand for places and to substitution possibilities; but market mechanisms are often weak and imperfect, and decisions tend to be far from marginal both in

general economic terms and in the large dimensions of planned flows of manpower in relation to meager stocks. Neither reliance on rigid, detailed and highly-centralized planning nor reliance on marginalism and the market can provide the answers to all the problems which arise. These problems are not all unique to the circumstances of a given country or group of countries; but they are sufficiently different often to require special and closer examination of the combinations of circumstances and issues of Third World cases rather than simplistic attempts at transferral or token adaptation of methods utilized elsewhere.

In short, practical experience and problems in applying extreme "views of the world" are pushing towards solutions nearer the middle of the continuum, towards methods less dichotomous than previously suggested. Policy-making in both cases can be used to move systems in the desired direction: it can strengthen the adjustment mechanism of the market place and influence demand for places in line with overall societal goals. But, as emphasized earlier, if we are to draw implications for educational planning, the how and how much of policy effects are matters where more empirical evidence is desirable than is available at present for most countries.

The Approaches Again: Integration?

The literature on the approaches to educational planning suggests strengths and weaknesses in each approach. Sometimes criticism of one method is used as a lead to champion another. Sometimes appraisers of the "state of the art" find no single approach adequate to guide decision-making in the domain of educational planning and policy. Unfortunately, critics have not set forth explicitly a set of criteria or characteristics for what they might consider an acceptable approach to planning. On the

basis of previous discussion, we can provisionally suggest characteristics of a potentially acceptable approach. Such an approach would incorporate the following overlapping and mutually reinforcing features:

Attention to complementarities and consistency

Educational development and general economic and social development are intimately related. The mutually supporting character of many programs requires a comprehensive view of planning, attention to internal consistency (i.e., among various educational projects), and to external consistency (i.e., among educational and other development projects).

Attention to substitutions and alternatives

A comprehensive view of the educating agencies in society rather than preoccupation with what is generally known as the "educational system" is needed. It requires assessment of various educational solutions to identified general development goals, and assessment of various technologies to achieve identified educational goals.

Attention to internal and external efficiency

Treatment of the productivity of the educational system (internal efficiency) and examination of the product utilized in society at large (external efficiency) are required. This involves attention to factors influencing achievement in learning processes and to what kind and what content of education for whom, as well as to how much education and for how many people.

Attention to the 'education market' and the labor market

Evaluation of the demand for education, its nature and determinants in relation to opportunities for education; evaluation of labor market considerations--demand, supply, and utilization of educated people in the economy; consideration of human aspirations and satisfactions in

relation to the developing education system and the developing society--all are required.

Flexibility of response to change in variables

There ought to be provision for feedback and evaluation from actual situations to the planning process and vice versa.

Attention to the long-run time horizon

Consideration of possible long-run consequences of present decision-making is needed. It should be recognized that of many possible futures, the one which may be realized is shaped in part by current and short-run planning and policies.

Table IV considers current approaches to educational planning in relation to these seven items.

Attempts to categorize in this fashion always involve defects. The table tends to oversimplify and there is overlap of categories. Moreover, we must recognize that assessments in terms of the conceptual potentials of approaches differ from assessment of the ways in which they have thus far been applied. But the table does highlight certain points of consequence. None of the approaches, as generally presented, meets all the criteria listed. Only the manpower approach stresses integration and consistency with overall development planning and directs attention to the complementarities of development. Only the demand-for-places approach makes deliberate analytic input of data on societal and personal factors influencing student enrolments and achievement. Only the rate-of-return/cost-benefit approach deals directly with the need to provide criteria for choosing among alternative investment possibilities.

The table draws attention to some areas of general weakness or ignorance. The recurrent problem of dealing with futurity and uncertainty, the need to attempt forecasting while retaining flexibility to respond to the unforecastable, is not adequately

TABLE IV
ATTENTION TO SOME ASPECTS OF PLANNING IN THREE CURRENT APPROACHES

Features Attention to:	(1) Demand-for-Places Approach	(2) Manpower Requirements Approach	(3) Rate-of-Return Benefit/Cost Approach
1. Complementarities and consistency (internal and external)	Weak. Tendency to piecemeal planning in relation both to the educating system and overall societal planning	Yes. STRENGTH. Directly related to overall development planning	Usually weak in specifying complementarities
2. Substitutions and alternatives (including "non-formal" education)	Not usually considered	Often ignored. But not inconsistent with method	Directs attention to and offers means of assessing alternatives
3. Costs and benefits	Not usually emphasized. But related to individual decisions	Often ignored.	Yes. STRENGTH. But "externalities" often ignored
4. Internal and external efficiency (including qualitative considerations)	Internal efficiency sometimes considered. External efficiency often ignored. Method does allow consideration of non-economic influences on achievement	Internal efficiency examination possible but often ignored. External efficiency stressed in quantitative aggregated terms	Can be used to measure relative efficiencies. "Externalities" are usually downplayed or ignored
5. Education market (D. of students, S. of places); and labor market (D. and S. of manpower)	Factors affecting student demand usually analyzed. STRENGTH. Labor market analysis often ignored	Factors affecting student demand usually ignored. Estimated MP needs stressed in quantitative, aggregated terms	Aligns with marginal analysis of market decisions
6. Flexibility of response to change in variables	Usually lagged response to change and inadequate attention to education-labor market interactions and communications	Rigidities often built into planning	Might give a guide to possible impact of change in variables
7. Long-term time horizon	Not usually considered. Trend extrapolation (minor modification in status quo) and crisis planning (reaction to unanticipated and possibly transient pressures) the common planning style	Long-run quantitative targets set. Long-run consequences of detailed planned expansions not usually examined. Sometimes reflects crisis planning in response to possibly transient manpower "shortages"	Embodies extrapolative notion of future earning patterns. Broadened B/C offers conceptual framework for assessing long-run alternatives.

faced in any approach or combination of approaches. Nor are education-economy-society relationships adequately dealt with. Both demand and supply of education have to be considered in planning, but in a broad context which relates them to human aspirations and values, to policies and realities of employment, and to a total educating system which is not myopically equated with the primary-secondary-higher schools complex. The efficiency/productivity concepts and measures reflected in approaches to educational planning tend to be defective and misleading in their emphasis on and interpretation of crude and quantitative measures of inputs and outputs, with little, if any, attention to educational content, learning processes, and utilization of acquired learning (of "drop-outs" as well as of "graduates") in economic and non-economic aspects of development. Too little is known about the interaction of plans, policies, and their outcomes in practice (intended and unintended consequences of implementation) to justify confident assumptions about the effects of the first two on the third, and vice versa.

Perspectives for Future Work

The review of three approaches to educational planning leads to some general conclusions about the 'state of the art.' First, what appear to be alternative approaches to planning might more usefully be viewed as complementary approaches. Integrated and modified, they have more to offer than they do separately. Second, efforts to develop methodologies and techniques appear to have outpaced our knowledge of the facts of planning situations; there is immediate need for assiduous effort in empirical research in different societal environments to nourish technical and theoretical developments. Third, although references to "theoretical" approaches to educational planning are common, the field is characterized by lack of rigorous theory, other than contributions from

economics.

Such conclusions are a beginning rather than an end: a springboard for research and development. Some areas of research need have emerged from discussion at various points in this paper. They include specifically:

- Education-occupation relationships. Utilization of educated persons within education itself and in the economy.
- Refinement of measures of educational inputs and outputs to incorporate qualitative considerations.
- Technology and processes of education - variations in inputs to the educative process and system variables affecting achievement.
- Identification and assessment of educating agencies outside the primary-secondary-higher schools complex.
- Cost-benefit assessments of educational projects, facing squarely questions of "externalities," the non-economic effects of education in development.
- Communication mechanisms--channelling of information flows between education and other sectors. Feedback to planning, viewed as process rather than definitive prescription.
- Interaction of plans, policies, and implementation. Study of intended and unintended consequences of policies in particular environments.

At a more general level there are two overall perspectives, absent in the approaches reviewed, which can illuminate future work in developing educational planning and related research. One is the broad social systems perspective; the other, the futures perspective: a dynamic systems dimension and a time dimension. It is common in discussions of educational planning to speak of the inter-relationships of education and society, and of the need to consider the long-run time period in relation to development of educational systems. But the ways in which these topics are treated in the literature reflect less than what is here intended by systems and futures perspectives.

The social systems perspective emphasizes dynamic interactions of

major institutional systems--political, economic, cultural, etc.-- and the inter-dependencies of these and agencies of education. In terms of educational planning, the systems perspective has the potential to make several contributions. It may direct attention to "educating systems" rather than to "educational systems" and hence be a corrective to preoccupation with the primary-secondary-higher schools complex and concomitant failure to recognize and study alternatives. It may direct attention to the dynamics of system change and hence to the desirability in planning of considering both the complementarities which condition successful change in or through education and the potentially wide repercussions of planned alteration in one element of a complex systems network. The systems perspective may lay bare the weaknesses of drawing almost exclusively upon a single body of theory to inform planning activities. Economics thus far has made the major conceptual/technical contribution to educational planning. It is probably the most sophisticated of the social sciences in terms of general theory development; but it does not claim to consider, other than as "givens" or parameters, the behaviors of the non-economic subsystems of society. Economic aspects of educational planning are extremely important, but they are not the only aspects. The systems perspective allows them to be set in a total complex which permits integration of contributions from other social and behavioral sciences. Finally, the social systems perspective may direct attention to variations in socio-cultural environments, behaviors and decision-making processes in different countries and regions and thus enable us to distinguish that which may be generally applicable cross-nationally in planning from that which may be particular to certain situations and peoples.

The futures perspective in planning involves serious consideration of the long-run time horizon (10, 20, 30 or more years ahead). Detailed educational plans in practice have to deal with short- and medium-run time periods (1, 3, or 5 years). The question is:

to what extent and in what manner is the futures perspective taken into account in making current plans and policies? The literature indicates that long-run considerations, where they enter the picture at all, do so typically in one of two ways: in "perspective plans" and in "education as investment" discussions. Some countries have long-run "perspective" plans which sketch targets for education 15 to 20 years ahead. These tend to reflect a same-but-more notion. For example, the target of 40% participation of relevant age cohorts in 4-year primary schooling 3 years from now; universal compulsory 6-year primary schooling in 20 years time (under similar conventional assumptions about "schooling"). The education-as-investment literature emphasizes the long time lag before investment in developing an educational system pays off because of the usual interpretation of the years it takes to form certain types of higher skills in the primary-secondary-higher schools complex. The increase-in-the-same perspective plan and the education-as-investment theme as currently interpreted reflect less than what is here intended by the futures perspective.

Many of those whose education is the subject of current planning and policy-making will live and work in the world of the 21st century. Planning with the futures perspective implies serious attention to what that world may be like (assuming that it will exist), to the uncertainties involved in dealing with futurity, and to the potential long-run consequences of present planning and policy-making. There are many possible futures, some of which we may view as more desirable than others, but only one of which may come to be. In part, the future which comes to be will be shaped by happenings over which we have no control; in part, it is already marked by past and present policies; but, to some extent, it can be influenced by choices still to be made, by policies and plans yet to be formulated and implemented. It may be said that we plan because we believe that we can have some effect on what will happen, that we can influence what the future may be like in directions which we deem desirable.

There is a growing body of futures-oriented literature, and the beginnings of methodological developments designed to aid systematic conjecturing about alternative possible social and technological futures.⁶¹ We have barely begun to consider what this may mean for educational planning. In very general terms, the futures perspective demands appraisal of present and contemplated educational plans and policies in terms of alternatives and possible long-run consequences. It raises questions of choice and change, of human capacities to face uncertainty, to assess situations and make choices and to deal with changing environments and needs. And it requires that we consider the relationship of these concerns to forms, contents, techniques and fundamental conceptions of education--how, where and when people learn to develop their capacities, and what kinds of knowledge they need for present and future living. The futures perspective asks of planning that it anticipate future trends and developments rather than merely respond to crisis pressures; and it requires of "crisis planning" that it examine policy solutions in terms of long-run consequences, and of whether they foreclose or liberate future decision possibilities.

To suggest that educational planning be viewed in terms of social systems and alternative futures perspective is one thing. To develop the capabilities, concepts, methods and analyses necessary to deal with futures planning in education and to make the perspectives operationally relevant is another. What is suggested is not a panacea for the ills of planning, but an agenda for research. Such a suggestion may well be an appropriate way to end a paper concerned with approaches to so young an area of study as educational planning.

FOOTNOTES

1. For an overview of the elements in enrollment calculations in Third World countries, see: Baghee Alfred Liu, Estimating Future School Enrollment in Developing Countries, A Manual of Methodology. Paris: UNESCO, 1966.
2. Detailed discussion of these matters is found in: Committee on Higher Education, Higher Education, Report of the Committee appointed by the Prime Minister under the Chairmanship of Lord Robbins, 1961-63 [referred to as the "Robbins Report"]. London: HMSO, 1963. See especially Appendix I (Demand for Places in Higher Education), Parts II and III, pp. 37-92. The technical details of the survey of 21-year-olds are provided in Annex DD, pp. 307-341. Recent literature in the sociology of education has abandoned the "pool of ability" as a useful concept, adopting the view that ability, for practical purposes, is a social product.
3. M. David et alia, Educational Achievement: Its Causes and Effects. Ann Arbor, Michigan: University of Michigan Survey Research Center, 1961. And, James N. Morgan, et al., Income and Welfare in the United States. New York: McGraw-Hill, 1962.
4. Rose Knight, "Trends in University Entry: An Inter-Country Comparison" in OECD, Social Objectives in Educational Planning. Paris: OECD, 1967, pp. 85-148. The comparison covers Belgium, France, the Federal Republic of Germany, Great Britain, the Netherlands, Sweden, and the United States.
5. Mrs. Knight elaborates the social multiplier concept thus: "If parents expect children to enjoy at least as good an education as they have enjoyed and if a substantial proportion of them look one stage ahead, and a smaller proportion two or more stages ahead, then parental pressures alone would keep demand for places proportionate to increase in enrollment after a 20-25 year time lag (with certain fertility assumptions).

"But, in addition, the present and past social composition of upper secondary and higher education will determine the magnitude of the accelerating factor which may be termed "the social mobility multiplier.

"What is to be expected is that the proportion of second generation graduates will increase; that the increased number of graduate parents will ensure a minimum level of demand for places which will be correspondingly higher than the present

level. Also, that this minimum level is less sensitive to policy and financial measures than the demand from non-graduate parents."

Knight, *ibid.*, pp. 184-5.

6. C. Arnold Anderson, "Sociological Factors in the Demand for Education," in OECD, Social Objectives in Educational Planning. Paris: OECD, 1967, especially pp. 37-38. It may be noted that, in economic terms, we are here speaking of shifts in demand curves for education without necessarily any change in economic position.
7. Torsten Husen (editor), International Study of Achievement in Mathematics. Stockholm: Almqvist & Wiksell. New York: John Wiley & Sons, 1967. Volume 1 (304 pages) explains the establishment of procedures and methodology, the construction of cognitive and noncognitive testing instruments, the hypotheses tested. Volume 2 (368 pages) reports the analysis and testing program in mathematics achievement. The twelve countries involved in I.E.A. are: Australia, Belgium, England, Federal Republic of Germany, Finland, France, Israel, Japan, the Netherlands, Scotland, Sweden, and the United States.
8. Two works representative of efforts in this direction are: E.L. Erickson and W.B. Brookover, Society, Schools and Learning, Boston, Mass.: Allyn & Bacon, 1969; and Hector Correa, "The Psychological and Social Variables Determining Education," in Socio-Economic Planning Sciences, Vol. 2, Nos. 2-3-4, April 1969, pp. 439-454.
9. C. Arnold Anderson, *op. cit.* (above, note 6), p. 37.
10. Seymour Sacks, "Historical Trends and Present Patterns in Educational Expenditure: Constraints on Planning for Education in Developed Nations" in G.Z.F. Bereday, J.A. Lauwerys, and Mark Blaug (eds.), Educational Planning. The World Year Book of Education 1967. New York: Harcourt, Brace & World, 1967. pp. 117-134.
11. See Knight, *op. cit.* (above, note 4), pp. 194-5, where data for seven developed countries for 1955-1962 are graphed. It is pointed out that the parallel nature of growth in per capita private consumption and per capita GNP may result from the way these two aggregates are derived in some countries.
12. Knight, *ibid.*, p. 199.

13. Mark Blaug, M.H. Peston, and A. Ziderman, "The Utilization of Educated Manpower in Industry," in OECD, Inter-Governmental Conference on the Education and Utilization of Scientific and Technical Personnel. Paris: OECD, 1966.
14. Mark Blaug, "An Economic Interpretation of the Private Demand for Extra Education," in Economica, 1966.
15. R. Ruiter, "The Past and Future Inflow of Students into the Upper Levels of Education in the Netherlands," in OECD, Social Objectives in Educational Planning, pp. 85-147. Note that secondary grammar schools in the Netherlands are the sole route to university education. The author uses a "social class index" which is a weighted average of the labor force composition for a region; it is this index which gives the "best explanation" of grammar school first-year admission rates. See p. 99.
16. Ruiter, *ibid.*, p. 111.
17. Sacks, *op. cit.* (above, note 11), p. 134.
18. C.A. Moser and P.R.G. Layard, "Planning the Scale of Higher Education in Britain," in Journal of the Royal Statistical Society, December 1964, pp. 473-526. Knight, *op. cit.* (above, note 4).
19. Contrast, for example, Herbert S. Parnes in H.S. Parnes (ed.), Planning Education for Economic and Social Development, Paris: OECD, 1962, with Poignant's citation from the French Commission de l'Equipement Scolaire, (same OECD volume): "There can be no question of halting or speeding up the general growth of secondary and higher education that is bound to result from..." [pressures of social demand].
20. The World Year Book of Education, 1967 (*op. cit.*, above, note 10). Mrs. Floud's contribution on "The Robbins Report and the Reform of Higher Education in Britain" is Chapter 5 of the Year Book. The Robbins Report (*op. cit.*, above, note 2) discusses the social demand and economic needs issues in Chapter VI, especially pp. 48-49 and pp. 70-74. Chapter XIV presents the case for regarding higher education as one of the most important forms of national investment.
21. Moser and Layard, *op. cit.* (above, note 19).
22. Robbins Report, *op. cit.* (above, note 2), Appendix One, Part IV.

23. Raymond Poignant, "France" in OECD, Policy Conference on Economic Growth and Investment in Education. Paris: OECD, 1962. Vol. IV, pp. 9-32. Friedrich Edding, "Educational Planning in West Germany" in Bereday et. al. (editors), op. cit. (above, note 20), pp. 100-116. Ruiter, op. cit. (above, note 16).
24. Ruiter, op. cit. (above, note 16), pp. 104-106.
25. The Mediterranean Regional Project embodies an attempt by six countries of the OECD to assess educational needs up to 1975 and arrives at detailed plans for meeting them. The six countries are Greece, Italy, Portugal, Spain, Turkey, and Yugoslavia.
26. E.R. Rado, "Manpower Planning in East Africa" in 1967 World Year Book of Education (op. cit., above, note 10), p. 281.
27. Beresford Hayward, in OECD, Social Objectives..., op. cit. (above, note 4), p. 306.
28. See, OECD, Social Objectives..., op. cit., (above, note 4), Summary Review by the rapporteur, Leila Sussman.
29. e.g. Anderson in Social Objectives..., op. cit., (above, note 4), page 9, makes a strong argument for education as consumption ("The honourific quality of education is for most people one reason for seeking it...") in certain societies, before considering investment aspects. Several writers resist with some fervor the notion of viewing education as investment at all, considering that the investment viewpoint strikes in some way a blow against cultural considerations.
30. Ruiter, op. cit. (above, note 15), pp. 126-132, elaborates on this.
31. George Skorov, "Manpower Approach to Educational Planning: methods used in the centrally planned economies" in UNESCO, Economic and Social Aspects of Educational Planning. Paris: UNESCO, 1964, pp. 131-146. Nicholas DeWitt, "Educational and Manpower planning in the Soviet Union" in Bereday et. al. (eds.), Educational Planning..., op. cit. (above, note 10), pp. 219-239.
32. The relevant Reports are cited in full in the bibliography, entries #33 - #42.

33. The growing literature on mathematical models ~~is~~ not reviewed in this paper. An example of Tinbergen-type models is found in OECD, The Residual Factor and Economic Growth, Paris: OECD, 1967, which also reports discussion and some evaluation of the models by fellow economists. A general overview of mathematical models may be obtained from reading: OECD's Mathematical Models in Educational Planning, in Bereday, et. al. (eds.), Educational Planning..., op cit. (above, note 10), pp. 398-422.
34. See, for example, the contributions of T. Balogh and A.K. Sen to OECD, Residual Factor..., op. cit. (above, note 33), pp. 180-197.
35. Moser and Layard, op. cit. (above, note 18).
36. T. Balogh and P.P. Streeten, "The Coefficient of Ignorance" in Bulletin of the Oxford University Institute of Economics and Statistics, Vol. 25, No. 2, May 1963, pp. 99-107.
37. Two attempts at refinement of educational output measures are illustrated in unpublished doctoral dissertations by Kenneth Neff and Donald Sanders. Neff developed a pass-year measure and Sanders a pupil-hours measure which incorporated course content in the output indicators. Neff additionally used a development weighting of subjects, applying his method to Indonesia. See Kenneth Neff: Educational Planning in a National Development Context: Indonesia--A Case Study. Washington, D.C., The American University, 1965, Unpublished Ph.D. Dissertation.
38. OECD-MRP, Turkey--Country Report. Paris: OECD, 1965, Chapter III, "Education and Social Development." Lerner's research is described in detail in the now classic volume, Daniel Lerner, The Passing of Traditional Society. New York: Free Press of Glencoe, 1958. Sherif Mardin discusses "Social Factors Affecting Educational Reforms," again in the context of Turkish experience, in Chapter III of OECD, Lectures and Methodological Essays on Educational Planning. Paris: OECD, 1964.
39. OECD-MRP, Yugoslavia--Country Report. Paris: OECD, 1965, page 90.
40. In sensitivity analysis one factor is varied and the effect on final estimates is observed; whereas, in sources of change analysis several factors have varied and portions of the variation in final estimate, which has been observed, are attributed to each of the varying factors.

41. Robinson G. Hollister, "A Technical Evaluation of OECD's Mediterranean Regional Project: Methods and Conclusions" in G.Z.F. Bereday et. al. (eds.), Educational Planning, op. cit. (above, note 10), page 169.
42. One statement of the trend was expressed in the Report of a UNESCO Mission to Somalia thus:-

 "In the beginning there was a tendency in the policy of UNESCO to consider education in the sense of general education, as a thing in itself which of necessity had to be paid for. High priority was therefore given to abolishing illiteracy as quickly as possible. The educationist was not concerned with where the money had to come from. At a later stage, partly as a reaction to prior disregard of the economic point of view, it was fully stressed that education had to be subjected to economic development and in principle had to be financed from the increased national income. The extreme consequences of this policy may in turn lead to an underrating of general education."
- UNESCO, Report of the Educational Planning Group on their First Mission to Somalia (March 6 - May 26, 1962). WS/0862.300. Distribution limited. 325 pages, mimeographed. pp. 7-8.
43. The approaches of the twelve Missions to their educational planning tasks are described in an unpublished paper by the present author. Items 53, 54 and 55 of the bibliography annexed relate to Ethiopia, Nigeria, and Sudan respectively and illustrate the practical problems and variations in applying the manpower approach in African countries.
44. E.R. Rado elaborates this point in "Manpower Planning in East Africa" in G.Z.F. Bereday, et. al. (eds.), op. cit. (above, note 10).
45. For example, L.G. Hines, "The Hazards of Benefit-Cost Analysis as a Guide to Public Investment Policy" in Public Finance, Vol. 17, 1962, pp. 101-117; and M.S. Feldstein, "Opportunity Cost Calculations in Cost-Benefit Analysis" in Public Finance, Vol. 19, No. 2, 1964, pp. 17-40.
46. See annexed bibliography, items 62-68.
47. OECD, Residual Factor and Economic Growth. Paris: OECD, 1967.
48. *ibid.*, page 267 (Tibor Scitovsky).
49. *ibid.*, page 273 (Robert R. Neild).

50. Mark Blaug is a notable exception to the generalization on the British stance. He offers an exhaustive defence of rate-of-return analysis in "The Rate of Return on Investment in Education in Great Britain" in The Manchester School, September 1965, pp. 205-261. John Vaizey is representative of the Western contra group. Balogh, S  n, and Merrett set much of their criticism against a background of concern with "underdeveloped" countries.
51. Thus the U.S. medical profession is used by some as a prime illustration of lack of marginal productivity--wage relationship vitiating rate-of-return analysis; the pro. group cites the example as evidence of imperfection as tested by marginal productivity criterion and showing the diagnostic value of the criterion. A point of some interest in this connection is the feeling that teachers as a group are paid below their marginal value product (e.g., Ekhaus and others). Teachers are a large occupational category in any country, but they are of particular significance in less developed nations. Some of the problems related thereto are examined in my paper, "Teacher Shortages and Teacher Supply" (1968), which uses data from the aforementioned UNESCO Reports on Middle Africa.
52. This is true of several of the twelve UNESCO Africa Mission Reports examined by the present author.
53. Oscar de Echevarr  a-Salvar, "Educaci  n y desarrollo: El caso de Venezuela" in Journal of Inter-American Studies, Vol. 10, No. 4, October 1968, pp. 587-596.
54. J.A. Smyth and Nicholas L. Bennett, "Rates of return on Investment in Education: A Tool for Short-Term Educational Planning, Illustrated with Ugandan Data" in G.Z.F. Bereday et. al. (eds.) Educational Planning, op. cit. (above, note 10).
55. The problem of unemployed school leavers is of serious dimensions in many African countries. See, for example, articles by: Archibald Callaway, "Unemployment Among African School Leavers" in Journal of Modern African Studies, Vol. 1, No. 3, 1963, pp. 351-371; Philip J. Foster, "Secondary School Leavers in Ghana. Expectations and Reality" in Harvard Educational Review, Vol. 34, No. 4, Fall 1964, pp. 537-558; and papers by Hunter and Callaway in G.Z.F. Bereday et. al., (eds.), Educational Planning, op. cit. (above, note 10).
56. T. Balogh and P. P. Streeten, op. cit. (above, note 37).

57. A good article on the problems of choice of projects and choice of techniques which considers the problem of relative standards is: Robert Sadove, "Economists, Engineers, and Development" in Finance and Development, Vol. 4, No. 2, June 1967, pp. 125-132.
58. Travelling in Africa, for example, one is struck often by the extent to which buildings, notably schools, are constructed on prototypes of European establishments, using designs, materials, etc., geared to different climate and conception of educational facilities. Plans often stress that attention will be given to flexibilities in technical coefficients of construction and in design, but in practice implementation often proceeds using European architects who replicate architectural designs common in their home countries.
59. Mary Jean Bowman and C. Arnold Anderson, "Theoretical Considerations in Educational Planning" in G.Z.F. Bereday, et. al., (eds.) Educational Planning, op. cit. (above, note 10) . Mark Blaug, "Approaches to Educational Planning" in Economic Journal, June 1967, pp. 271-272, and page 275 footnote.
60. Elaborated in a paper by the author, "Education and Economic Development: Some Aspects of the Soviet Case and its Relevance For Africa." (1967) The Soviet approach to education and manpower under the Five Year Plans has embraced the range of education for adults and youth, for illiterates and sophisticated specialists; of training in schools and on the job, by night, by day, in classrooms and by correspondence. It demonstrates that the manpower "needs" of development may be met in different ways at different times and in changing circumstances.
61. A listing of some of the United States literature is found in Michael Marien, Shaping the Future of American Education: A Preliminary Annotated Bibliography of Educational and General Futures. A shorter listing including some non-U.S. titles is given in Chapter 10 ("Alternative Futures and Education") of Educational Planning and Policy: An International Bibliography compiled by the present author. Both are "Working Drafts" reproduced at the Educational Policy Research Center, Syracuse, New York, in May 1969 and to be generally published in 1970.

ANNEX I

N.3. The author is grateful to Mr. Thomas Corcoran for preparation of the material in this Annex and for helpful discussion of research findings related to achievement in education.

A Partial Listing of System Inputs and Process Variables Believed to be Related to Academic Performance

<u>Variable - Finding</u>	<u>Sources</u>
<u>A. Organizational Variables</u>	
1. Per Pupil Relationship Kiesling (1967) has reported that the relationship is significant through the low ranges of expenditure in districts of over 2000 pupils in New York; but, in numerous other studies, expenditures increases do not account for major increases in achievement. Some studies have found an inverse relationship between level of expenditures and the dropout rate.	Burkhead, 1967; Shaycroft, 1967; Kiesling, 1967; Wise, 1968; Sexton, 1964; Flanagan, 1962
2. Class size or teacher-pupil ratio There is no consensus, although it seems clear that reductions in the 40-15 range have little impact unless accompanied by a change in instructional techniques. The benefit of increased resources in large groups seems to be offset by the difficulty of getting maximum contributions from each participant, and vice versa.	Fox, 1967; Boocock, 1966
3. Quality of facilities Despite assumption of professionals, there is little evidence of a significant relationship, other things being equal. However, the available data do not adequately break down facilities into the relevant components. Some facilities are undoubtedly related to outcomes, whereas others may serve an enabling function.	EEO Survey, 1967; Lyle, 1967

Variable - Finding

Sources

4. Increased Role Differentiation

The influence of increased specialization seems to vary according to the function of the specialists. Those with specific skills, such as speech therapists, seem to have very little impact on performance. The impact of para-professionals was not examined in the studies reviewed.

Stephens, 1967

5. Instructional Systems

Despite numerous efforts, very little is known about the effect of different teaching methods. Research on IPI and CAI is not yet complete. One exception is the finding that teachers trained in Flanders' Interaction Analysis teach differently and with more success. [IPI = individualized programmed instruction; CAI = computer assisted instruction.]

Flanders, 1960;
Gagne, 1965;
Boocock, 1966;
Amidon, 1965, 1967;
Stephens, 1967

6. School Climate

A number of efforts have been made to evaluate organizational climates or classroom climates, but their relationship to pupil performance is not clear. This may be due to poor conceptualization or to measurement problems (See Item 15).

Turner, 1964;
Boocock, 1966

7. Differentiation of Curriculum (=learning experiences)

The influence of different techniques of grouping pupils has been widely studied but there is no consensus about their impact on performance.

Goldberg, et. al., 1966;
Yates, 1966;
Postlewaite, 1967;
Thelan, 1967

B. Teacher Characteristics

8. Level of Education

The quantity and quality of a teacher's education have been found to be related to pupil performance, but the relationship is not strong enough to warrant any conclusions for policy.

EEO Survey, 1967;
Boocock, 1966

Variable - Finding

Sources

9. Teaching Experience

These findings are similar to those in Item 8.

10. Teacher Intellectual Attainment

Coleman found that a measure of teacher's verbal ability was the best predictor of pupil performance among the in-school variables included in the EEO Study.

EEO Survey, 1966

11. Teacher Attitudes

Several recent studies have demonstrated that the expectations of teachers have a powerful influence upon pupil performance. Other studies have examined the level of authoritarianism, degree of professionalization, level of commitment, amount of expressive content in interaction with pupils, etc., but have produced no consistent findings.

Rosenthal and Jacobsen, 1968;
Brookover, et. al., 1969;
Gordon, 1963

C. Student Characteristics

12. Student IQ and/or past performance

Both of these variables are strongly related to achievement, accounting for as much as 80 per cent of the variation. Overlooking the argument between geneticists and environmentalists, there are obvious tautological aspects to this relationship and it may reveal no more than the self-fulfilling aspects of the educational policies involved.

Boocock, 1966

13. Self Concept

Using somewhat different concepts, several studies have found self-concept to be strongly related to performance. Self-concept in academic roles is related to the expectations of significant others. Brookover found a .55 correlation between self-concept of academic ability and achievement in a six-year longitudinal study. A similar finding resulted from the EEO Survey.

Erickson and Brookover, 1969;
EEO Survey, 1966.

Variable - Finding	Sources
14. Socio-economic characteristics of peers This variable is a strong predictor of performance levels as well as aspirations, norms of behavior, etc. These findings provide one of the most powerful arguments for effective integration of all classrooms.	EEO, 1966; Wilson, 1968; Stodolsky and Lesser, 1967; Turner, 1964
15. Student Power Except for Coleman's finding that achievement was related to a pupil's sense of control over his environment, there are no studies relating this variable to performance measures or other outcome measures.	EEO, 1966

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ANNEX II

SUMMARY OF PRINCIPAL POINTS MADE IN ROBINSON HOLLISTER'S TECHNICAL EVALUATION OF THE MEDITERRANEAN REGIONAL PROJECT

<u>Major questions posed</u>	<u>Answers from the Evaluation</u>
1. Is the impact of manpower requirements on the educational system quantitatively significant enough to justify considerable effort in making detailed estimates of requirements?	1. Yes. Manpower requirements have a significant impact on educational output. In both projected MRP data 1960-75 and historical data 1951-61, over 50% of change in required output was determined by MP requirements above and beyond the increase in educational output required to keep pace with growth of the labor force.
2. If yes, are present methods so inaccurate that, for practical purposes, requirements cannot be estimated?	2. Much work is needed to improve the reliability and sophistication of manpower forecasting.
<u>Further questions derived from 2. above</u>	
3. Are occupation-input coefficients fixed or variable? What difference does it make? (The substitution problem--it is by this avenue that relative costs of various educational programmes could enter manpower forecasting procedures).	3. Assumptions play a large role in determining final results. Hence the seriousness of errors in assumptions. e.g., as much as 20% of change in requirements of higher education in one MRP plan could result from allowing for substitution possibilities.
4. To what extent do uncertainties about changes in productivity affect estimates?	4. The productivity estimates problem is important for a wide range of economic analysis. Manpower people should study the research. The process of estimating MP requirements might be more integrated with the total economic planning process.
5. To what degree must economic structure and labor force be disaggregated if reliable estimates are to be made?	5. Degree of desirable aggregation is an open question. Analysis of MRP plans suggested disaggregation of GDP to economic sectors did not contribute significantly to occupation distribution estimates. The payoff from disaggregation may not yet have been realized. BUT there is no guarantee that the effort to disaggregate data will yield better estimates than could be obtained from more aggregated information.
6. How serious is our ignorance of the exact relationship between occupation and "required" education? What difference does this make to usefulness of educational targets derived from estimated manpower requirements?	6. Most serious problem. Estimated educational outputs for some MRP plans are highly sensitive to assumptions on occupation/education relationships and the role they play in determining changes in the stock of education embodied in labor force. MP requirements approach rests on insecure foundations until results of such research are available.

ANNEX III

THE ECONOMIC RETURNS TO EDUCATION Summary of the Principal Findings of U.S. Studies

EDUCATION AND EARNINGS

1. Data on annual income for males show that at all age levels income increases as years of schooling increase.
2. The relationship between income and educational attainment has persisted through the years, even though the amount of schooling attained by the population has increased. Some differentials between graduates of different schooling levels have increased in recent years.
3. In terms of income received, persons with the most education benefit to the greatest extent from years of job experience.
4. Total lifetime income increases as education increases.
5. As in the case of annual income, the greatest gains in lifetime income in recent years have accrued to persons with the most education.
6. Even when lifetime income is discounted (i.e., equated to return on current investment) the contribution of additional education to earnings is positive and significant.

THE RATE OF RETURN ON INVESTMENT IN EDUCATION

1. Education yields a high rate of return on investment--i.e., the monetary returns exceed the costs of education by a considerable margin. This is true from the point of view of society as a whole as well as that of the individual who invests in education for himself.
2. Research on additional lifetime income resulting from private investment in more education shows that the rate of return remains high at all educational levels.
3. It is quite possible that society (as well as individuals) is making an "underinvestment" in college education.

THE CONTRIBUTION OF EDUCATION TO ECONOMIC GROWTH

1. Studies have concluded that increases in years of schooling completed by the labor force have contributed significantly to the economic growth of the nation.
2. These studies reinforce the conclusion that the social returns on educational investment are very profitable.

Source: Abstract of the Summary contained in Innes, et. al.: The Economic Returns to Education. Eugene, Oregon: University of Oregon Press, 1965, pp. 39-42

ANNEX IV

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